EFFECTIVENESS OF WARM WATER FOOTBATH ON LEVEL OF FATIGUE AND INSOMNIA AMONG PATIENTS RECEIVING CHEMOTHERAPY IN SELECTED HOSPITALS AT KANYAKUMARI DISTRICT

DISSERTATION SUBMITTED TO

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MEDICAL SURGICAL NURSING

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CERTIFICATE

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ABSTRACT

A quasi experimental study was conducted to evaluate the effectiveness of warm water foot bath on level of fatigue and insomnia among patients receiving chemotherapy in selected hospitals, Kanyakumari District.

Quasi experimental, pre test post test control group design was adopted for this study. Convenient sampling technique was used to select the samples. Out of the 60 samples, 30 samples were in study group and 30 samples in the control group. The Athens insomnia rating scale was used to screen the level of insomnia in study and control group. The fatigue self assessment scale was used to screen the level of fatigue in study and control group. For the study group the investigator gave warm water foot bath every evening 15 minutes. The researcher selected 7-8 samples each week for 4 weeks. The post test was conducted every week in the study and control group.

The findings reveals that, in study group during pre test, among 30 samples 11(36.67%) of them had moderate fatigue and 19(63.33%) had severe fatigue. In control group 12(40%) had moderate fatigue and 18(60%) had severe fatigue. During post test, in study group among 30 samples 16(46.67%) had moderate fatigue and 14(53.33%) had severe fatigue. In control group 24(80%) had moderate fatigue and 6(20%) had severe fatigue. The findings reveals that, in study group during pre test, among 30 samples 4(13.3%) of them had moderate insomnia and 26(87%) had severe insomnia. In control group 3(10%) had moderate insomnia and 27(90%) had severe insomnia. During post test, in study group among 30 samples 26(87%) had moderate insomnia and 3(10%) had severe insomnia. In control group 27(90%) had moderate insomnia and 3(10%) had severe insomnia. The paired 't' value for the level of fatigue was 3.73 which was greater than the table value 1.69 at $p<0.05$ level. It shows that warm water foot bath was effective in reducing the level of fatigue in patients receiving chemotherapy. Hence the research hypothesis (H_1) is accepted. The paired 't' value for the level of insomnia was 2.02 which was greater than the table value 1.69 at $p<0.05$ level. It shows that warm water foot bath was effective in reducing the level of insomnia in patients receiving chemotherapy.

The Independent ‘t’ value for study group and control group was 3.36 which was greater than the table value 1.96 at $p<0.05$ level. It shows that warm water foot bath was effective in reducing the level of insomnia in patients receiving chemotherapy. Hence the research hypothesis (H_1) is accepted.No significant association was found between the post test level of fatigue and insomnia among patients receiving chemotherapy in study group and control group with their selected demographic and clinical variables. Hence hypothesis is (H_2) is not accepted.

CHAPTER I

INTRODUCTION

Health is a resource for everyday life not the objective of living. The mode of being healthy includes as defined by the World Health Organization, a state of complete physical, mental, social wellbeing and not merely an absence of disease or infirmity.

A disease is a particular abnormal, pathological condition that affects part or all of an organism. It is often construed as a medical condition associated with specific symptoms and signs. It may be caused by factors originally from an external source, such as infectious disease, or it may be caused by internal dysfunctions, such as autoimmune diseases.

In humans, "disease" is often used more broadly to refer to any condition that causes pain, dysfunction, distress, social problems, or death to the person afflicted, or similar problems for those in contact with the person. In this it includes injuries, disabilities, disorders, syndromes, infections,deviant behaviours, typical variation of structure and function, while in other contexts and for other purposes these may be considered distinguishable categories. Diseases usually affect people not only physically, but also emotionally, as contracting and living with a disease can alter one's perspective on life, and one's personality.

Cancer is a disease process that begins when abnormal cells is transferred by genetic mutation by cellular De-oxyribo Nucleic Acid. It is one of the second largest killer disease next to heart disease. The chances of surviving the disease vary greatly by the type and location of the cancer and the extent of disease at the start of treatment. While cancer can affect people of all ages, and a few types of cancer are more common in children, the risk of developing cancer generally increases with age. In 2007, cancer caused about 13% of all human deaths worldwide (7.9 million). Rates are rising as more people live to an old age and as mass lifestyle changes occur in the developing world. (Brunner, 2008).

Many treatment options for cancer exist, with the primary including surgery, chemotherapy, radiation therapy, hormonal therapy, targeted therapy and palliative care. Which treatments are depends upon the type, location, and grade of the cancer as well as the person's health and wishes. The treatment intent may be curative or not curative.

Chemotherapy is the use of drugs to kill cancer cells. However, when most people use the word chemotherapy they are referring specifically to drug treatments for cancer that destroy cancer cells by stopping their ability to grow and divide. These powerful medications circulate in the bloodstream and directly damage the cells that are actively growing. Because cancer cells generally grow and divide faster than normal cells, they are more susceptible to the action of these drugs. However, damage to healthy cells is unavoidable, and this damage accounts for the side effects linked to these drugs.

Complication of chemotherapy includes lethargy, fatigue, insomnia, mucositis, erythema, pruritus, desquamation, esophagitis, pneumonitis, hepatitis, Gastro intestinal symptoms (nausea, vomiting, diarrhoea, tenesmus), Genitourinary symptoms (frequency, urgency, dysuria) cytopenia.

Cancer-related fatigue is a distressing persistent, subjective sense of tiredness or exhaustion related to cancer or cancer treatment that is not proportional to recent activity and that interferes with usual functioning. It is one of the most common and distressing complaints among cancer patients. Seventy to eighty percent of cancer patients report experiencing fatigue not only during chemotherapy or radiotherapy, but also pre- and post-treatment. Poor sleep has been reported among 30% to 75% of newly diagnosed or recently treated cancer patients. Patients with cancer often complain of difficulty falling asleep, difficulty staying asleep, and non-restorative sleep, before, during, and for years after the end of treatment.

One-third of breast cancer survivors suffer from persistent fatigue up to 10 years post-treatment. Cancer-related fatigue interferes with daily life activities, reduces quality of life, and is often a significant reason for patients to discontinue treatment. Together with pain and depression, Cancer Related Fatigue has been

identified as a priority by the National Institutes of Health, with recommendations for more research on the definition, occurrence, assessment and treatment of these cancer-related symptoms, as well as on the relationship of these symptoms with other coexisting conditions, such as sleep disorders. This motivated the researcher to conduct study on warm water footbath in alleviating fatigue and insomnia among patients receiving chemotherapy.

Here the need for the complementary therapy like biofeedback, aromatherapy, relaxation techniques, herbal remedies, massage, acupuncture, meditation and exercise emerge.

A warm water foot bath is the immersion of both feet and ankles in warm water for 10–30 minutes. It is an excellent way to draw blood from inflamed or congested areas of the body. Indications for use are foot and leg cramps, sore throat, fatigue, cold, flu, nausea, insomnia, and chest or pelvic congestion.

Background of the study

The global burden of cancer continues to increase largely because of the aging and growth of the world population alongside increasing adoption of cancer causing behaviours particularly in smoking. (Cline, 2011)

Tobacco use is the cause of about 22% of cancer deaths. Another 10% is due to obesity, a poor diet, lack of physical activity and drinking alcohol. Other factors include certain infections, exposure to ionizing radiation, and environmental pollutants. In the developing world nearly 20% of cancers are due to infections such as hepatitis B, hepatitis C and human papilloma virus. These factors, at least partly, by changing the genes of a cell. Typically many such genetic changes are required before cancer develops. Approximately 5-10% of cancers are due to genetic defects inherited from person's parents. Cancer can be detected by certain signs and symptoms or screening tests. It is then typically further investigated by medical imaging and confirmed by biopsy.

The annual report provides the estimated numbers of new cancer cases and deaths in 2014, as well as current cancer incidence, mortality, and survival statistics and information on cancer symptoms, risk factors, early detection, and

treatment. In 2014, there will be an estimated 1,665,540 new cancer cases diagnosed and 585,720 cancer deaths in the United States. Cancer remains the second most common cause of death in the United States, accounting for nearly 1 of every 4 deaths.

Cancer is the second biggest cause of death in India. By 2030 cancer death expected to increase from 7.9 million - 11.5 million. World Health Organization (2011) reported that the number of new cases of cancer diagnosed every year around the world is a set to increase by 69% by 2030 to 21 million and deaths are also expected to rise by 72% by 2030 to 13 million (Ranjani,2010).

Every year about 8,00,000 new cancer patients get registered with the National Cancer Registry Programme in India. This shows that cancer is one of the major health problems in India at present. Lung and oral cancer are the most common types of cancers among men. Whereas cervical and breast cancer among women in India. There were 5, 56,400 cancer related deaths in India. In the year 2010.Out of which, 71% of cancer patients (3, 95,400) were of the age group between 30-69 years.

In the battle of the female cancers, breast cancer has overtaken cervix as the top cancer among women in Chennai. Statistics from the Madras Metropolitan Tumour Registry at the Adyar Cancer Institute's Hospital registry indicate that a subtle change has taken place that has had breast cancer incidence growing at a much higher rate than cervical cancer. This trend is creeping up even in the State, says R. Swaminathan, head, Cancer Registry, Adyar Cancer Institute. Dr. Swaminathan explains initial results from the Tamil Nadu Cancer Registry Project, to be shortly inaugurated formally by Chief Minister Jayalalithaa show similar trends. "That covers a population of over 7.3 crore and enumerates cancers from the entire State. While we are still at the preliminary stages of that investigation, it is clear that breast cancer is stealing ahead of cervical cancer, especially in urban areas," (The Hindu, June 5,2013)

In the rural areas, cervical cancer still remains high, and much ahead of breast cancer. For instance, in Dindugul, a rural centre, the incidence of cervical cancer is at 25.9, tailed by breast in a 2009-10 observation. Whereas Coimbatore,

an urban centre, reflects the Chennai picture: breast cancer is 20.3 and cervical cancer is 13.7. What are the reasons for this difference, and the apparent reversal in the urban centres. At the outset, genital hygiene and a change in the reproductive profile of women in the metros, Dr. Swaminathan says. “Clearly, lifestyle factors have a play. The one measurable factor is education: that has made the difference,” says V. Shanta, chairman, Adyar Cancer Institute. She adds education is key, when girls study more; they are more likely to have better genital hygiene. It is the same with chewing tobacco, (The Hindu, June 5, 2013)

A comparative study between the incidence of the two conditions in 1982-87 and 2009-2010 makes this clear: In 1982-87, the incidence of Cervical Cancer in the Registry was 44.3 per 1,00,000 population. Comparatively, the breast cancer incidence was 19.1. In 2009 – 2010, the cervical cancer incidence had dropped to 19.3, while that of breast cancer rose to 35.8 per 1,00,000.

Dr. Swaminathan says the number of people coming in with early stages of cervical cancer has also gone up substantially from 4.9 (1984- 1988) to 11.7 (2006-2009), whereas, with the breast it has only gone up from 1.2 to 2.2 (during the same period). However, oncologists are concerned about the late presentation of persons with both breast, and cervical cancers. 70 – 80 per cent of both cancers come in the locally advanced stage, and this needs to change. (The Hindu, June 5, 2013)

Sand and sand dunes are being removed along the Pallam, Rajakkamangalam and Thengapattinam coastal areas. Removal of coastal sand would result in seawater incursion, sand accretion in the land and tidal wave incursions. Sand removal at Usaravilai near Pallam where large scale extraction has caused large pits and seawater enters inland areas rendering hundreds of acres saline. “If sand mining was not stopped, many houses in this area would be damaged due to the waves. The district administration should take immediate steps, as the Collector was the chairman of the Coastal Regulation Management Authority,” said A. Maria James, Disaster Management Expert, from Nagercoil. He also said that the natural radiation in the district was 40 times higher than other places due to the presence of monazite, a substance that contained 8 percent radioactive thorium. (The Hindu, July 27, 2011)

During the extraction of monazite and other mineral sand from the coastal areas, the lower strata of the sand were exposed, which added to the close radiation. This has resulted in the increased incidence of cancer in the coastal areas. It might have been mentioned that the permissible radioactive exposure for an American was only 150 to 250 m rem (National council on radiation protection and management report no. 93, 1.9.88). In a recent study during 2006, it was observed that the alpha radiation was 9780 Bq/kg and beta radiation was 69260 Bq/kg of sand in Manavalakurichi. It was found that instances of mental retardation and cancer were very high in this area. (The Hindu, July 27, 2011)

Significance and need for the study

Cancer also known as a malignant tumor or malignant neoplasm is a group of diseases involving abnormal cell growth with the potential to invade or spread to other parts of the body. Not all tumors are cancerous; benign tumors do not spread to other parts of the body. Possible signs and symptoms include: a new lump, abnormal bleeding, a prolonged cough, unexplained weight loss, and a change in bowel movements, among others. While these symptoms may indicate cancer they may also occur due to other issues. There are over 100 different known cancers that affect humans.

Kavitha and Jayasri(2014) conducted a descriptive study to assess the side effects of chemotherapy among patients receiving chemotherapy at MIOT , hospitals, Chennai. Objectives were to assess the side effects of chemotherapy among patients receiving chemotherapy and to associate the selected demographic variables with the side effects of chemotherapy. Open ended questionnaire was used to explore the experience of 30 patients. The results revealed that 53% (16) patients belonged to 41-60 years of age group. The patients had lung cancers (13%),sarcomas (23%),lymphomas (13%),gastro intestinal cancer(33%) and 17% of them were with cancer cervix and ovary .Phi test reveals the significant association between sex and nausea at 0.046, No of chemotherapy cycles and pain level at 0.046.

Wan J et al (2014) conducted an experimental study to validate the safety of and explore the effect of warm-water footbath on fatigue, sleep and quality of life in hospitalized post-stroke patients in School of Nursing, Hungkuang University, Taiwan. A total of fifty-one subjects were in the control group whereas fourty- one subjects were in the experimental group were chosen by purposive sampling. The warm water footbath was given with 41°C was lasted 15 minutes before bedtime for 7 nights. The feet and legs of samples were immersed in a standardized footbath tank, with a depth of 10 cm above ankles. A structured questionnaire, Fatigue Severity Scale, Verran and Snyder-Halpern Sleep Scale, and Stroke Impact Scale were used to assess the fatigue, sleep. Data were processed by SPSS 18.0 for Windows. The major statistical procedures applied were frequencies and percentages, independent t test, paired t-test, chi-square test, and repeated-measures ANOVA. A value of $P < 0.05$ was considered statistically significant. The finding shows that there was no significant changes in quality of life were reported by the control group. But the experimental group showed a significant improvement in the "emotion", "Activities for daily living" and "mobility" ($p<.05$) domains of quality of life.

A health treatment that is not classified as standard western medical practice is referred to as "alternative". It encompasses a variety of disciplines that include everything from diet and exercise to mental conditioning and life style changes.

For some time now, non-drug strategies have been recommended as first line treatment in the management of some disease especially in case of insomnia. Although medications are equally effective for helping people with insomnia to sleep, they cannot cure the condition and prolonged use regularly resulted in dependency. The findings indicate that non pharmacological interventions produce reliable and durable changes in the sleep patterns of patients with insomnia.

Here the need for the complementary therapy like Biofeedback, Aromatherapy, Relaxation techniques, Herbal remedies, Massage, Accupuncture, Meditation and Exercise emerge. Footbath is one of the effective methods for inducing sleep. Thermoregulation exhibits powerful interaction with sleep. A

warm footbath warms the skin, which causes vessel dilation and induces heat dissipation. Intervention that enhances heat dissipation prior to sleep will improve the sleeping pattern of the subjects.

Footbath can be an effective method of relaxation, since it induces both significant increases in parasympathetic activity and significant decrease in sympathetic activity. In addition, footbath increases white blood cells count and natural killer cells cytotoxicity. Since these physiological changes are likely to be, beneficial to health.

The investigator during her clinical experience has come across cancer patients with inadequate sleep and measures to induce sleep have been found ineffective. It was noticed that sleep habits is easily changed by hospital routines as well as due to existing Illness. From the findings of literature, the researcher realized that the importance of promoting sleep by nursing interventions and designed a study on the effect of warm water footbath on level of fatigue and insomnia in patients with cancer.

Statement of the problem

A quasi experimental study to evaluate the effectiveness of warm water footbath on level of fatigue and insomnia among patients receiving chemotherapy in selected hospitals at Kanyakumari District.

Objectives of the study

- ✓ To evaluate the effectiveness of warm water foot bath on level of fatigue and insomnia among patients in study group.
- ✓ To associate the post interventional level of fatigue and insomnia among patients in study and control group with selected demographic and clinical variables.

Hypotheses

- **H_1**: There is a significant difference between pre test and post test level of fatigue and insomnia among patients receiving chemotherapy in study and control group.

- **H_2**: There is a significant association in post test level of fatigue and insomnia among patients receiving chemotherapy in study group and control group with the selected demographic and clinical variables.

Assumption

- Patients receiving chemotherapy may have increased level of fatigue and insomnia.
- Warm water foot bath may improve level of fatigue and insomnia among patients receiving chemotherapy.
- Non-pharmacological interventions also induce sleep.

Operational definitions

- **Evaluate:**

Evaluation refers to the identification of difference between pre test and post test level of fatigue and insomnia among cancer patients.

- **Effectiveness:**

Effectiveness is the significant reduction in the fatigue and insomnia among cancer patients in study group and can be measured by comparing with control group.

- **Warm Water Footbath:**

In this study, footbath therapy is an immersion of feet and ankles in the water for 15 minutes at temperature ranging from 36-38 degree Celsius.

- **Fatigue:**

Fatigue is a subjective state in which an individual experiences a sustained sense of exhaustion and diminished capacity for physical and mental work that is not relieved by rest.

- **Insomnia:**

Insomnia is a sleep disorder in which there is an inability to fall asleep or to stay asleep as long as desired.

▪ **Chemotherapy:**

Chemotherapy is the drug which is indicated to the cancer patients to kill the cancer cells.

Delimitations

- Patients receiving chemotherapy who have other co- morbidities
- Loss of feeling in lower extremities
- Unconsciousness
- Paediatric and pregnant group

Projected outcome

The finding of the study will help the patients receiving chemotherapy to reduce the impact of fatigue and insomnia. Warm water foot bath will reduce the level of fatigue and insomnia.

At the end of the study the patients receiving chemotherapy will understand and practice warm water footbath to reduce the level of fatigue and insomnia.

Conceptual framework

Conceptualization is the battle plan of attack that is developed to research a topic that demands an answer. Good research generally integrates research findings into an orderly coherent system. Such integration typically involves identifying or developing an appropriate conceptual framework.

The conceptual frame work is based on modification made on **"Nola.J. Pender's Health Promotion Model (2002-Revised)",** consists of individual characteristics experiences, behaviour specific knowledge & affect and behaviour outcome.

Individual characteristics / experiences

I. Prior related behaviour

According to the theorist, prior related behaviour describes frequency of the similar behaviour in the past direct and indirect effects on the likelihood of engaging in health promoting behaviour.

In this study the prior related behaviour includes the assessment of demographic variables, clinical variables and Pre assessment of fatigue and insomnia by Athens insomnia scale and fatigue self assessment scale.

II. Personal factors

According to the theorist, personal factors are predictive of a given behaviour and shaped by the nature of the target behaviour being considered.

In this study the personal factors include age, sex, education, residence, religion, dietary pattern, income, and occupation.

III. Behaviour specific cognitions and affect

a) Perceived benefit of action

According to the theorist, perceived benefits of action are anticipated positive outcomes that will occur from health behaviour.

In this study the perceived benefits of action helps the patients receiving chemotherapy to reduce the level of fatigue and insomnia.

b) Perceived barriers of action

According to the theorist, perceived barriers actions are anticipated, imagined or real blocks and personal costs of understanding a given behaviour.

In this study the perceived barriers of action is patients receiving chemotherapy may have lack of knowledge, lack of practice and lack of motivation regarding warm water bath.

C) Perceived self efficacy

According to the theorist, perceived self efficacy is judgment of personal capability to organize and execute a health promoting behaviour. Perceived self efficacy influences perceived barriers to action so higher efficacy results in lowered perceptions of barriers to the performance of the behaviour.

In this study the self efficacy is that the patients receiving chemotherapy, the importance of warm water foot bath to promote sleep onset and improve the knowledge and practice which will reduce the level of fatigue and insomnia.

d) Activity related affect

According to the theorist, activity related affect describes subjective positive or negative feelings occur before, during and following behaviour based on the stimulus properties of the behaviour itself. Activity related affect influence perceived self efficacy, which means the more positive the subjective feeling, the greater the feeling of efficacy. In turn, increased feeling of efficacy can generate further positive affect.

In this study activity related affect is reduction of level of fatigue and insomnia.

e) Interpersonal influences

According to this theorist, Interpersonal influences cognition concerning behaviours, beliefs, or attitudes of the others. Interpersonal influences include: norms (expectations of significant others), social support (Instrumental & emotional encouragement) and modelling (vicarious learning through observing others engaged in a particular behaviour). Primary sources of interpersonal influences are families, peers and health care providers.

In this study interpersonal influence is that Intervention for reduction of level of fatigue and insomnia by warm water foot bath for 15 minutes in the evening.

f) Situational influences

According to this theorist situational influences are personal perceptions and cognitions of any given situation or context that can facilitate or impede behaviour Include perceptions of options available, demand characteristics and aesthetic features of the environment in which given health promoting is proposed to take place. Situational influences may have direct or indirect influences on health behaviour.

In this study situational influence is the patients receiving chemotherapy to modify the life style and maintain health status which influence the sleep onset time.

IV. Behavioural outcome

a) Immediate competing demands and preferences

According to the theory, competing demands are those alternative behaviours over which individuals have low control, because there are environmental contingencies such as work or family care responsibilities. Competing preferences are alternative behaviour over which individual exert relatively high control, such as choice of ice cream or apple for a snack.

In this study warm water foot bath may influence the patients receiving chemotherapy to gain knowledge on warm water foot bath and practice them in reducing the level of fatigue and insomnia.

b) Commitment to plan of action

According to the theorist Commitment of plan of action is the concept of intention and identification of a planned strategy leads of implementation of health behaviour.

In this study Commitment of plan of action is the patients receiving chemotherapy develop positive attitude and makes decision to continue the practice of warm water foot bath to healthy life style and maintain health status which improve fatigue and insomnia.

c) Health promoting behaviour

According to the theorist health promoting behaviour is an end point or action outcome directed toward attaining the health outcome such as optimal well being, personal fulfilment and productive living.

In this study health promoting behaviour of patients receiving chemotherapy may practice warm water foot bath to maintain health status which improve fatigue and insomnia.

Post test assessment

In this study Post test assessment of level of fatigue and insomnia by Athens insomnia scale and fatigue self assessment scale was done in study group and control group. The level of fatigue and insomnia were graded as normal, mild, moderate and severe.

Feed back:

Behaviour modification was seen among the patients receiving chemotherapy. They were motivated to practice warm water foot bath daily and maintain normal sleep onset.

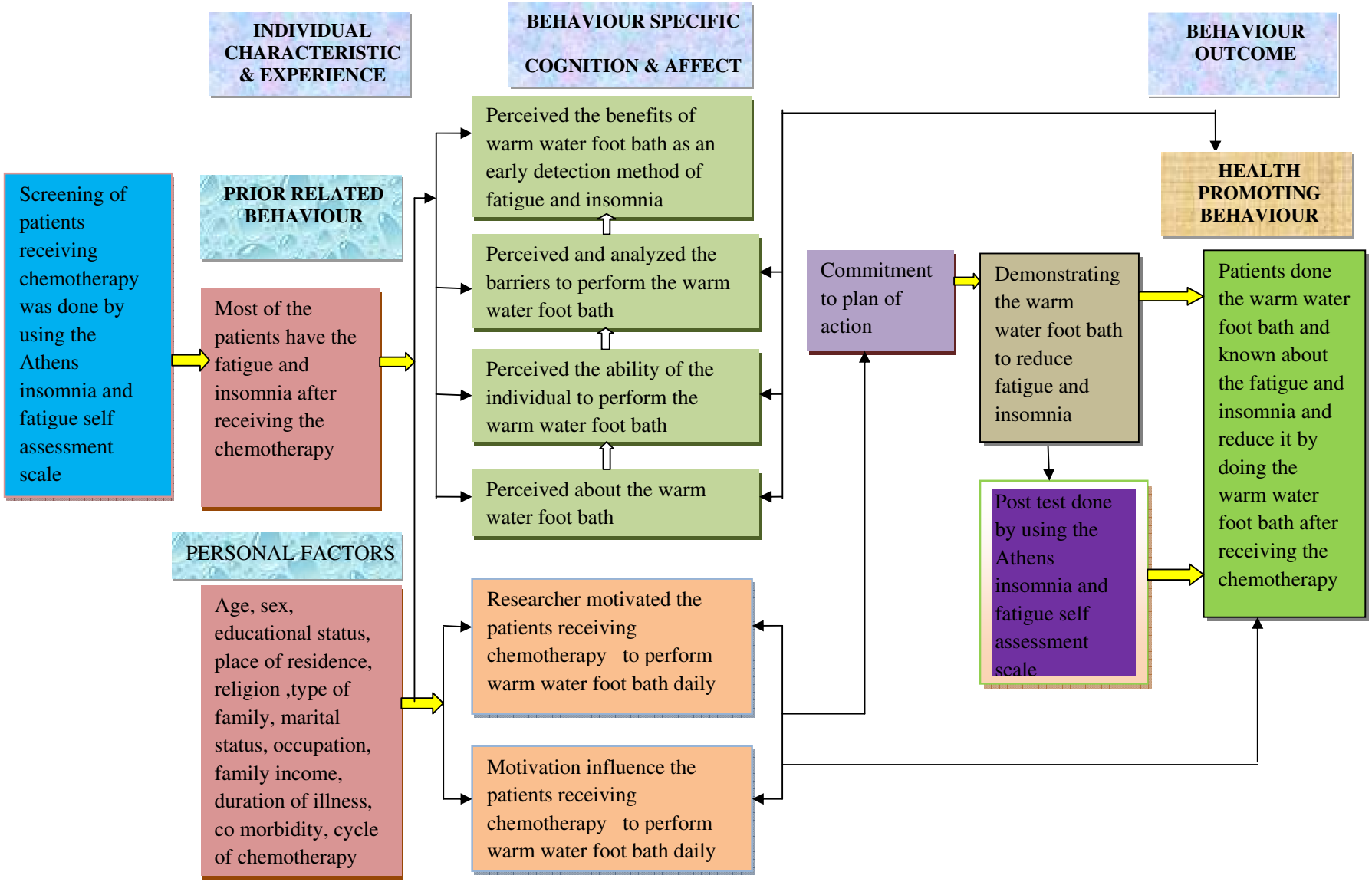

Fig-1.1: CONCEPTUAL FRAMEWORK BASED ON PENDERS HEALTH PROMOTION MODEL (Revised-2002)

CHAPTER II

REVIEW OF LITERATURE

Review of literature is a vital component of the research process. It gives the researcher orientation to the conduction of the study. It provides the source of research ideas for the new researcher.

The review of literature is presented under the following sub headings. Review of literature is related to

1. Studies related to cancer.

2. Studies related to the effects of chemotherapy.

3. Studies related to the effects of warm water foot bath

1) Studies related to cancer:

Julienne. E, et al (2014) conducted a longitudinal study to assess the cancer-related fatigue-mechanisms, risk factors, and treatments among cancer patients in Brazil. 218 samples were chosen by purposive sampling technique. A structured questionnaire was used to score the cancer-related fatigue. 66% of the participants had affected activities of daily living due to fatigue. The study concluded that there was high prevalence of cancer-related fatigue among cancer patients.

Fleming. L, et al (2014) conducted a randomized controlled trial to evaluate the associations between common symptom clusters and evaluates pre-treatment to post-treatment changes in clinical levels of these symptoms following cognitive behaviour therapy for insomnia among cancer patients. 113 participants with insomnia were chosen. Post cognitive behaviour therapy the number of those experiencing clinical insomnia and clinical fatigue decreased. The study concluded that there was no changes in anxiety rates from baseline to post-treatment in the cognitive behaviour therapy group and modest reductions in rates of those with clinical depression. Seven individuals (9.6%) from the cognitive behaviour therapy group were completely symptom free at post-treatment

compared with 0% from the treatment as usual condition. Chi-square analysis revealed a significant relationship between group allocation and changes in symptoms of insomnia and fatigue. No such relationship was found between group allocation and mood variables.

Teunissen. S, (2007) had conducted a study in hospitalized advanced cancer patients. This study was used to analyze the relation between anxiety, depressed mood and the presence and intensity of physical symptoms. Anxiety and depressed mood were assessed in a hospitalized advanced cancer population (n = 79) primarily by the Hospital Anxiety and Depression Scale (HADS), and also by a single-item question `Are you anxious and/or depressed?' and by the Edmonton Symptom Assessment System (ESAS). Physical symptoms were assessed by a semi-structured interview and by the Edmonton Symptom Assessment System. Thirty-four percent of the patients reported anxiety, 56% depressed mood and 29% both, as assessed by the Hospital Anxiety and Depression Scale. The relationship between anxiety, depressed mood and the presence and intensity of physical symptoms in hospitalized advanced cancer patients is very limited.

Mitchell. A, Ferguson. D, (2013) conducted a study on the "depression and anxiety in long-term cancer survivors compared with spouses and healthy controls: a systematic review and meta-analysis". This study describes in which whether depression and anxiety are more common in long-term survivors of cancer compared with their spouses and with healthy controls. The prevalence of anxiety was 17·9% (95% CI 12·8—23·6) in 48 964 cancer survivors and 13·9% (9·8—18·5) in 226 467 healthy controls (RR 1·27, 95% CI 1·08—1·50; p=0·0039). Neither the prevalence of depression (26·7% *vs* 26·3%; RR 1·01, 95% CI 0·86—1·20; p=0·88) nor the prevalence of anxiety (28·0%*vs* 40·1%; RR 0·71, 95% CI 0·44—1·14; p=0·16) differed significantly between cancer patients and their spouse. This findings suggest that anxiety, rather than depression, is most likely to be a problem in long-term cancer survivors and spouses compared with healthy controls.

Neel. C, et al (2013) conducted a study on the "determinants of death anxiety in patients with advanced cancer**".** The study design was cross-sectional analysis of baseline data from a phase 2 pilot intervention trial. Setting of this study was Princess Margaret Cancer Centre, University Health Network, Toronto, Canada. The main outcome of this study was death anxiety, as measured by the Death and Dying Distress Scale (DADDS). Thirty-two per cent of the sample reported death anxiety of at least moderate severity. The physical symptoms most strongly associated with death anxiety were changes in physical appearance. The findings suggest that death anxiety in patients with advanced cancer is common and determined by the interaction of individual factors, family circumstances and physical suffering.

Cohen. M, (2013) had performed a study on "depression, anxiety, and somatic symptoms in older cancer patients: a comparison across age groups". Participants were composed of 321 cancer patients 60years and older, who were divided into three age groups: 60 years to 69 years, 70 years to 79 years, 80years and above. The participants answered the Brief Symptom Inventory-18. Depressive, anxiety, and somatic symptoms and cancer-related problems were lowest in the 70 years to 79years age group and highest in the 80years and above age group. These results suggest that the study of psychological reactions to cancer should examine differences between age groups among older cancer patients.

Kwekkeboom. KL, **et al (2010)** conducted an experimental study to assess the evidence regarding mind-body interventions that have shown efficacy in treating two or more symptoms in the pain-fatigue-sleep disturbance cancer symptom cluster in persons with cancer in japan.108 samples were chosen. The study concluded that the impact of relaxation, imagery/hypnosis, meditation, and music interventions in persons with cancer experiencing concurrent pain, fatigue, and sleep disturbance. These mind-body interventions could help patients manage all the symptoms in the cluster with a single treatment strategy.

Mustian et al (2010) conducted an experimental study to assess the integrative nonpharmacologic behavioural interventions for the management of cancer-related fatigue among cancer patients in brazil.200 samples were chosen.

The study concluded that the relative merits of integrative nonpharmacologic behavioural interventions for the effective clinical management of cancer related fatigue and makes recommendations for future research.

Arunachalam. D,et al (2011) had performed a study on "Quality Of Life in cancer patients with disfigurement due to cancer and its treatments". The aim of this study was to evaluate the effect of disfigurement due to cancer and its treatments on Quality Of Life. A total of 120 patients from the inpatient/outpatient department of oncology who had undergone various forms of treatment for cancer were included in this study. A sudden change either due to cancer or its treatment or due to side effects leads to significant social maladjustment, elevated anxiety, depression, and poor Quality Of Life among the cancer survivors with body disfigurement which calls for multi professional involvement in addressing various psychosocial issues.

Kandasamy.A and Chaturvedi. S.K, (2011) conducted a study on "spirituality, distress, depression, anxiety and quality of life in patients with advanced cancer". The study was cross-sectional in nature. Fifty patients with advanced cancer from a hospice were assessed with the following instruments: the Visual Analog Scale for Pain (VAP), M.D. Anderson Symptom Inventory (MDASI), Hospital Anxiety Depression Scale (HADS), Functional assessment of cancer therapy - Palliative Care (FACT-pal), and Functional assessment of chronic illness therapy-spiritual well-being (FACIT-sp). Anxiety was negatively correlated with spiritual well-being (SpWB). Sp WB was significantly correlated with fatigue symptom distress, memory disturbance, loss of appetite, drowsiness, dry mouth, and sadness. This study suggests that spiritual well being is an important component of the quality of life of advanced cancer patients, and is closely related to the physical and psychological symptoms of distress. It should be addressed appropriately and adequately in palliative care settings.

Joe. S, **et al (2009)** conducted a longitudinal study to assess the insomnia in the context of cancer among cancer patients in Laval University Cancer Research Centre and School of Psychology in Canada. 200 samples were chosen by purposive sampling technique. The study concluded that pharmacologic and psychological treatments previously shown effective to treat insomnia in healthy

individuals are discussed as valuable treatment options for cancer patients as well. Because long-term use of hypnotic medications is associated with some risks (e.g. dependence), it is argued that psychological interventions (e.g. stimulus control, sleep restriction, cognitive therapy) are the treatment of choice for sleep disturbances in the context of cancer, especially when it has reached a chronic course. However, the efficacy of these treatments has yet to be verified.

Morin. CM,et al (2005) conducted a randomized controlled trial to evaluate the added value of medication over Cognitive Behavioural Therapy (CBT) alone for acute treatment of insomnia and the effects of maintenance therapies on long-term outcome among cancer patients in university hospital sleep centre in Canada between January 2002 and April 2005. 160 adults with persistent insomnia were chosen. Participants received cognitive behavioural therapy alone or plus 10 mg/d (taken at bedtime) of zolpidem for an initial 6-week therapy, followed by extended 6-month therapy. Patients initially treated with monthly maintenance for 6 months or received no additional treatment and those initially treated with combined therapy (plus 10 mg/d of zolpidem) continued with intermittent use of zolpidem or only. The study concluded that the cognitive behavioural therapy used singly or in combination with zolpidem produced significant improvements in sleep latency, time awake after sleep onset, and sleep efficiency during initial therapy (all P<.001); a larger increase of sleep time was obtained with the combined approach (P = .04). Both cognitive behavioural therapy alone and cognitive behavioural therapy plus zolpidem produced similar rates of treatment responders (60% [45/75] vs. 61% [45/74], respectively; P = .84) and treatment remissions (39% [29/75] vs. 44% [33/74], respectively; P = .52) with the 6-week acute treatment, but combined therapy produced a higher remission rate compared with cognitive behavioural therapy alone during the 6-month extended therapy phase and the 6-month follow-up period (56% [43/74 and 32/59] vs. 43% [34/75 and 28/68]; P = .05). The best long-term outcome was obtained with patients treated with combined therapy initially, followed by cognitive behavioural therapy alone, as evidenced by higher remission rates at the 6-month follow-up compared with patients who continued to take zolpidem during extended therapy (68% [20/30] vs. 42% [12/29]; P = .04). In patients with persistent insomnia, the addition of medication to cognitive behavioural therapy

produced added benefits during acute therapy, but long-term outcome was optimized when medication is discontinued during maintenance cognitive behavioural therapy.

Gillies. L.C, (2005) had performed a study "to assess the effects of guided imagery and relaxation on patients receiving treatment for non-metastatic cancer". This study was aimed at helping patients manage and cope with negative symptoms of cancer, could significantly reduce anxiety levels in patients with cancer receiving radiotherapy. The participant was requested to listen to this tape at least once a day. A general conclusion to this pilot study suggests that guided imagery may contribute to a lowering of anxiety.

King. J.V, (2002) conducted a study on "a holistic technique to lower anxiety: relaxation with guided imagery". In this study, the Donovan (1980) Relaxation with Guided Imagery (RGI) script was tested to investigate its effects on reducing state anxiety, as measured by the Spielberg State-Trait Anxiety Inventory (STAI), on 33 graduate nursing students. The Relaxation with Guided Imagery (RGI) script was administrated three times, at two week intervals between sessions, in a one-group pre-test/post-test pre-experimental design. Findings revealed state anxiety levels were reduced in each of the three administrations at the .001 level of confidence; that anxiety reduction was short-term, returning to previous levels in two weeks; and that trait anxiety levels were unchanged.

2) Studies related to chemotherapy:

Yang, H.L et al (2011) conducted an experimental study to assess the effectiveness of a warm-water footbath on relieving fatigue and insomnia problems in patients undergoing chemotherapy in Canada. 25 and 18 samples were chosen by purposive sampling technique in the comparison and experimental groups. Longitudinal study design was used. Adults diagnosed with gynaecologic cancer and receiving a 4-series platinum chemotherapy regimen were recruited and then followed up for 6 months. They completed fatigue and insomnia items on the 1st, 2nd, 4th, 7th, and 14th days after each scheduled chemotherapy. Participants in the experimental group soaked their feet in 41°C to 42°C warm

water for 20 minutes every evening, starting from the eve of receiving the first chemotherapy, whereas participants in the comparison group did not do so. Participants in the experimental group reported a significant reduction in fatigue and improvement in sleep quality from the second session of chemotherapy and continued to improve during the study period. The finding shows that in reduced fatigue and insomnia symptoms for gynaecologic cancer patients during chemotherapy.

Welch. S, et al(2010) conducted an experimental study to assess the side effects of chemotherapy among colorectal cancer patients in Canada. 28samples were chosen by purposive sampling technique in the comparison and experimental groups. Five trials comparing chemotherapy plus bevacizumab with chemotherapy alone as first- or second-line treatment were identified. Our meta-analysis indicates an advantage in favour of the addition of bevacizumab to chemotherapy in terms of Overall Survival (OS) [Hazard Ratio (HR) 0.79; 95% confidence interval (CI) 0.69-0.90; P = 0.0005], Progression-Free Survival (PFS) (HR 0.63; 95% CI 0.49-0.81, P = 0.0004), and response rate (RR 1.50; 95% CI 1.06-2.10, P = 0.02). The most commonly observed adverse effects related to bevacizumab included hypertension, proteinuria, bleeding, andthrombosis. Gastrointestinal perforation and poor wound healing were also observed; however, their incidence was rare. The findings shows that patients with advanced colorectal cancer receiving first- or second-line fluoropyrimidine -based chemotherapy, the addition of bevacizumab improves PFS and OS at the expense of increased incidence of toxicity. The magnitude of benefit may differ based on the chemotherapy regimen with which bevacizumab is partnered.

Hickok .JT, **et al (2001)** conducted an experimental study to assess the role of patients' expectations in the development of anticipatory nausea related to chemotherapy for cancer in United States. 63 female cancer patients receiving their first course of chemotherapy. The report revealed that twenty women (32%) expected to experience nausea and twelve (19%) reported anticipated nausea (AN) before the third cycle. Pre-treatment expectations predicted anticipated nausea (AN) at cycle three (Spearman's r = 0.41, P = 0.001) anticipated nausea (AN) developed in 40% of patients who expected nausea, 13% of those who were

uncertain whether they would develop it, and no patients who did not expect nausea. Logistic regression indicated that expecting nausea was the strongest predictor (chi (2) =13.15; P < 0.001). The results a role for cognitive factors in the development of chemotherapy side effects and suggest testing psychological interventions to modify patients' expectations.

3) Studies related to warm water foot bath:

Rabenstein. T, et al(2013) conducted an experimental study to compare warm water infusion with standard air insufflations according to findings from randomized controlled trials in New York. 1283 patients were included. Warm water infusion was given . The findings shows that there was sole modality for facilitating insertion, was associated with a fourfold higher risk of cecal intubation failure compared with air insufflations (risk ratio [RR] 4.01, confidence interval [CI] 1.17 to 13.78, P=0.03), but this risk did not significantly differ between warm water infusion and air insufflation with the hybrid technique (i.e., brief use of air when difficulty, e.g. poor view, was encountered). Warm water infusion and air insufflation were associated with similar cecal intubation times (P=0.62) and adenoma detection rates (P=0.49), but with warm water infusion patients experienced significantly less pain (P<0.00001) and a significantly lower proportion requested sedation and/or analgesia (RR 0.48, CI 0.35 to 0.66, P<0.00001).

Selvakumari. R, (2011) conducted an experimental study to evaluate the effects of warm water footbath on patients with fever in Gujarat.30 samples were chosen with fever ranging from 99-103 degree Fahrenheit by purposive sampling technique. Warm water foot bath was given. After and before application of warm water foot bath temperature was checked. Statistical test of paired t test was adopted to find out the significant difference between before and after warm water foot bath therapy application. The finding shows that average post test temperature was less than the mean pre test temperature. The mean pre test temperature 101.06 degree Fahrenheit was reduced to 98.85 degree Fahrenheit during post test. This shows an average decrease of 2.21 degree Fahrenheit. The computed t value is 10.936 that is more than the table value of 1.699 with n- 1 degree of freedom at 0.05 level, p =<0.001.This reveals a significant mean

difference between pretest and post test temperature readings. The mean difference is 2.21 degree Fahrenheit, which shows that the warm water foot bath therapy is helping to reduce the temperature.

Sung. EJ, et al(2000) conducted an experimental study to evaluate the effects of bathing and hot footbath on sleep in winter among female volunteers in Geneva.9 samples were chosen by purposive sampling technique. Subjects were assigned to three sleep conditions: sleep after bathing (Condition B), sleep after hot footbath (Condition F), and sleep without either treatment (Control). Polysomnograms (consistingoflectroencephalograph, electrooculograph,and electromyography) were obtained, and body movements during sleep were measured while monitoring both the rectal and skin temperatures of subjects. In addition, subjective sleep sensations were obtained with a questionnaire answered immediately by the subjects on awakening. The rectal temperature increased by approximately 1.0 degree C under Condition B, but this elevation was not observed under Condition F compared with Control. In contrast, the respective increases in the mean skin temperature of participants subjected to bathing and hot footbath were greater than those of Control, although these temperature differences became negligible 2 h after subjects went to bed. The sleep onset latency was shortened under both conditions compared with Control. Body movements during the first 30 min of sleep in Control were greater than under the other conditions. Rapid eye movement (REM) sleep decreased under Condition B compared with Condition F, and stage 3 was greater under the latter condition compared with Control. As such, the subjective sleep sensations were better under the two treatment conditions. The finding shows that both daily bathing and hot footbath before sleeping facilitates earlier sleep onset. A hot footbath is especially recommendable for the handicapped, elderly, and disabled, who are unable to enjoy regular baths easily and safely.

CHAPTER- III

RESEARCH METHODOLOGY

This chapter deals with the methodology adapted to this study. It includes Research approach, Research design, Variables, Setting, Population, Sample, Sample size, and Criteria for sample selection, Sampling technique, Description of tool, Content validity, Pilot study, Reliability, Method of data collection, Plan for data analysis and Ethical considerations.

Research approach

The researcher utilized Quantitative research approach.

Research design

Quasi experimental pre test post test control group design was adapted to this study.

GROUP	PRETEST	INTERVENTION	POST TEST
Study group	O_1	X	O_2
Control group	O_1		O_2

O_1 - Assessment of level of fatigue and insomnia before intervention

X - Warm water foot bath

O_2 - Assessment of level of fatigue and insomnia after intervention

Variables

Independent variable - Warm water foot bath

Dependent variable - Level of fatigue and insomnia

Demographic variables - Age, gender, place of residence, religion, type of family, marital status, education, occupation, family income

Clinical variables – Type of diet, duration of illness, co morbidity

Setting

The study was conducted in International Cancer Centre, Neyyoor Kanyakumari District, was run by the Church of South India (C.S.I) Medical Mission Hospital under the supervision of Dr. Rajesh Sathya Medical Superindent of C.S.I Medical Mission. It is situated 10 kilometres away from St. Xavier's Catholic College of Nursing, Chunkankadai, Nagercoil**.** It is also an ancient teaching institution with Para medical courses like nursing school and college. The total bed strength of 500.C.S.I Medical Mission Hospital comprises various wings like Oncology, Cardiology, General Surgery, General Medicine, Ophthalmology, Ear Nose and Throat, Orthopaedics, Intensive Care Unit, Paediatric, Maternity, Nephrology, Dialysis. In this oncology unit (International Centre)it is headed by Dr. V.C. Sudhakaran. Oncology unit consists of 40 beds for General wards for males and females and 20 beds for Private wards. It has well equipped radiation and chemotherapy unit. Cobalt -60 used to provide radiation.

Population

- **Target population**

The population under study constituted all the patients receiving chemotherapy with fatigue and insomnia.

- **Accessible population**

All the patients receiving chemotherapy with fatigue and insomnia who are admitted in International Cancer Centre, Neyyoor and Holy Cross Hospital , Vettoornimadam, Nagercoil.

Sample

Patients receiving chemotherapy who fulfilled the inclusion criteria who are admitted in International Cancer Centre, Neyyoor.

Sample Size

Sample size was 60, out of which 30 samples in the control group and 30 samples in the study group.

Sampling technique

Convenient sampling technique was adopted to select the patients receiving chemotherapy with fatigue and insomnia in study group and control group.

Criteria for sample selection

- **Inclusion criteria**
  - Patients who were receiving chemotherapy.
  - Patients who were receiving chemotherapy age between 20-70years.
  - Patients who were receiving chemotherapy having fatigue and insomnia.
- **Exclusion criteria**
  - Patients who were receiving chemotherapy unable to do warm water foot bath.
  - Patients who were receiving chemotherapy having other hereditary diseases like diabetic foot ulcers, paralysis of lower extremities.
  - Patients who were receiving chemotherapy unconscious and critically ill.
  - Patients who were receiving chemotherapy not willing to participate.

Description of tool

The tool used in this study has 3 parts.

Part – 1

A structured questionnaire to collect the demographic variables such as age, gender, place of residence, religion, type of family, marital status, educational status, occupation and family income.

A structured questionnaire to collect the clinical variables such as type of diet, duration of illness, co morbidity and cycles of chemotherapy.

Part – 2

Athens Insomnia Scale

This scale is intended to record the own assessment of any sleep difficulty the patient have been experienced. It indicates the estimate of any difficulty in sleep onset.

Scoring

0 : normal

1-8 : mild level of insomnia

9-16 : moderate level of insomnia

17-24 : severe level of insomnia

Part – 3

Fatigue Self Assessment Scale

Fatigue has been defined as a sense of continuing tiredness, with periods of sudden and overwhelming lack of energy or feeling of exhaustion that is not relieved following rest or sleep. This section will identify fatigue, its severity, frequency and duration.

Interpretations:

0 : no fatigue

0-3 : mild level of fatigue

4-6 : moderate level of fatigue

7-9 : extreme level of fatigue

10 : the worst fatigue

Description of the intervention

Assessment Session

Goal of session

- To identify the patients receiving chemotherapy with fatigue and insomnia in the study and control group
- To teach warm water foot bath to patients receiving chemotherapy with fatigue and insomnia in the study group

Procedure for assessment

The researcher measured the level of fatigue and insomnia by Athens insomnia scale and fatigue self assessment scale from the study group and control group.

Procedure Session

Step 1:

Take 2 litres of warm water in a large basin.

Step 2:

Check the temperature of the water (36-38 degree Celsius) with the help of lotion thermometer.

Step 3:

The researcher makes the patient comfortably in sitting position on the chair.

Step 4:

The researcher immerses the patient's feet and ankles into the warm water for 15 minutes**.**

Step 5:

The researcher takes away the patients feet and ankles from the warm water and wipes it with sponge towel.

Step 6:

The researcher makes the patient in comfortable lying position

Content validity

The content validity of the tool was ascertained by the expert opinion from 2 Medical practitioners and 3 Nursing experts. The experts gave their opinions and suggestions for further modification of items to improve the clarity and content of the question. The formal tool was prepared as per the suggestion and advice given by experts.

Reliability

Standardised tool such as Athens insomnia scale , Fatigue self assessment scale were used to assess the insomnia and fatigue**.**

Drop out Analysis

Sl.No	Sample No	Reason for drop out	Time of drop out
1.	17th in study group	Severe dyspnoea	3rd day
2.	8 th in study group	Disoriented	5th day

Table No.3.1.Drop out Analysis

Pilot study

Pilot study was conducted in International Cancer Centre, Neyyoor, after receiving a formal approval from Medical Superintendent of C.S.I. Mission Hospital, Neyyoor. The pilot study was conducted in International Cancer Centre, Neyyoor among 6 patients 3 were in study group and 3 were in control group who

were selected. Then pre assessment was done with the help of Athens insomnia scale and fatigue insomnia scale. The intervention was given with warm water footbath. Then the post test was conducted on the sixth day. Analysis of the data was done by using descriptive and inferential statistics. The tool was reliable and tool scoring was found feasible and practicable. No changes were made and researcher proceeded for main study.

Procedure for data collection

Step 1: Obtaining permission

The researcher obtained formal approval from the Principal of St. Xavier's Catholic College of Nursing and the Medical and nursing Superintendent of the C.S.I. Mission hospital, Neyyoor, the researcher proceeded with the data collection after obtaining the written consent. The investigator selected samples from International Cancer Centre, Neyyoor, Kanyakumari District and Holy Cross Hospital, Vettoornimadam, Kanyakumari District.

Step 2: Pre test

Convenient sampling technique was used to assess the effectiveness of warm water footbath on level of fatigue and insomnia. Total strength of the study setting consists of 37 patients. Control group consists of 35 patients. The pre test level of fatigue and insomnia identified with the help of Athens insomnia scale and Fatigue self assessment scale. There were 34 with fatigue and insomnia in study group and 30 with fatigue and insomnia in control group. The Athens insomnia scale and fatigue self assessment scale was used to screen the study group and control group.

Step 3: Intervention

After screening, purposive sampling technique was used for sample selection. The investigator selected 30 samples for control group and 30 samples for study group. For the study group the investigator gave warm water foot bath about 15 minutes by using the warm water in 36-38 degree Celsius. The investigator carried out the intervention at 5am to 6 am. The researcher selected

15 samples each week for 4 weeks. The study was conducted from 01-08-2014 to 31-08-2014.

Step 4: Post test

The post test was conducted every week in study group and control group. After the post test, for the control group the researcher explained the warm water footbath and demonstrated the warm water footbath.

Table 3.2: DATA COLLECTION PERIOD, NUMBER OF SAMPLE AND METHOD OF SAMPLE SELECTION

S.no	Date	Number of samples		Method of sample selection
		Study group	Control group	
1	01-08-2014	03		Purposive sampling technique was used
2	03-08-2014	03		
3	05-08-2014	03		
4	06-08-2014	02		
5	08-08-2014	02		
6	09-08-2014	03		
7	10-08-2014	02		
8	11-08-2014	05		
9	12-08-2014	03		
10	13-08-2014	01		
11	14-08-2014	02		
12	15-08-2014	03		
13	16-08-2014		03	
14	17-08-2014		03	
15	18-08-2014		02	
16	19-08-2014		03	
17	20-08-2014		02	
18	22-08-2014		04	
19	23-08-2014		02	
20	24-08-2014		03	
21	25-08-2014		02	
22	26-08-2014		01	
23	27-08-2014		02	
24	29-08-2014		03	

Ethical consideration

The study was conducted after the approval of the dissertation committee of St. Xavier's Catholic College of Nursing. Permission was obtained from the International Cancer Centre, Neyyoor, Kanykumari District and Holy Cross Hospital, Vettoornimadam, Kanyakumari District. Written consent was obtained from each subject before starting the data collection. Assurance was given to the study participants regarding the confidentiality of the data collected.

Plan for analysis

Data collected was analysed by using both descriptive and inferential statistics such as mean, standard deviation, chi square, paired test and unpaired test.

- **Descriptive statistics**

  Mean and standard deviation was used to assess the effectiveness of warm water foot bath on level of fatigue and insomnia.

- **Inferential statistics**

  Fatigue and insomnia on control group and study group. Unpaired't' test was used to compare post test level of fatigue and insomnia on control group and study group. Chi-square was used to find out the association of post test level of fatigue and insomnia among patients receiving chemotherapy between the study group and control group with their selected demographic variables.

CHAPTER IV

DATA ANALYSIS AND INTERPRETATION

This chapter deals with the analysis and interpretation of the data collected on level of fatigue and insomnia among patients receiving chemotherapy. This chapter also represents the findings of the study. The data collected from the samples were tabulated, analysed and preserved in the tables and interpreted under the following sections based on the objectives and hypotheses of the study. This chapter is divided into four sections.

Section A: Distribution of samples according to the demographic and clinical variables of the patients receiving chemotherapy in study group and control group.

Section B: I. Distribution of patients receiving chemotherapy in study group according to the level of fatigue and insomnia before intervention.

II. Distribution of patients receiving chemotherapy in study group according to the level of fatigue and insomnia after intervention.

Section C: Testing hypotheses

I. Comparison of pre test and post test level of fatigue and insomnia among patients receiving chemotherapy in study group and control group.

II. Association between the post test level of fatigue and insomnia among patients receiving chemotherapy in study group and control group with selected demographic and clinical variables.

SECTION-A

Table-4.1: DISTRIBUTION OF FATIGUE AND INSOMNIA AMONG PATIENTS RECEIVING CHEMOTHERAPY ACCORDING TO THE DEMOGRAPHIC AND CLINICAL VARIABLES IN STUDY GROUP AND CONTROL GROUP

n = 60

S. No	Demographic and clinical variables	Study group n=30		Control group n=30	
		f	%	f	%
1	**Age**				
	• 21-40 yrs	5	16.6	8	26.6
	• 41-60 yrs	13	43.3	12	40
	• 61-80 yrs	10	33.3	10	33.3
	• >80 yrs	2	6.66	0	0
2	**Gender**				
	• Male	18	60	21	70
	• Female	12	40	9	30
3	**Place of residence**				
	• Rural	11	36.66	18	60
	• Semi-rural	13	43.33	8	26.66
	• Urban	4	13.33	0	0
	• Semi-urban	2	6.66	4	13.33
4	**Religion**				
	• Hindu	14	46.67	18	60
	• Christian	16	53.33	12	40
5	**Type of family**				
	• Joint	6	20	4	13.33
	• Nuclear	24	80	26	86.67
6	**Marital status**				
	• Married	23	76.66	19	63.33
	• Unmarried	3	10	6	20
	• Widow/widowed	4	13.33	5	16.66
7	**Education**				
	• Illiterate	13	43.33	25	83.33
	• Primary	9	30	3	10
	• Secondary	5	16.66	2	6.66
	• Graduate and others	3	10	0	0

8	**Type of diet** • Vegetarian • Non vegetarian	 18 12	 60 40	 19 11	 63.33 36.67
9	**Duration of illness** • 0-12 months. • 13-24 months. • 25-36 months.	 16 11 3	 53.33 36.67 10	 17 10 3	 56.6 33.3 10
10	**Co morbidity** • Diabetes • Hypertension • Stroke	 16 11 3	 53.33 36.67 10	 17 10 3	 56.6 33.3 10
11	**Cycle of chemotherapy** • 1 • 2 • 3	 19 7 4	 63.33 23.33 13.33	 13 12 5	 43.3 40 16.66
12	**Occupation** • Government worker • Private worker • Self worker • Unemployment	 4 3 12 11	 13.33 10 40 36.67	 7 12 11 0	 23.33 40 36.67 0
13	**Family income** • <Rs.5,000 • Rs.5,001-10,000 • Rs.10,001-20,000 • >Rs.20,0000	 18 9 3 0	 60 30 10 0	 23 4 2 1	 76.66 13.33 6.66 3.33

Table No.4.1 represents the distribution of patients receiving chemotherapy, according to age in study group 5 (16.6%) of them belongs to the age group between 21-40 years, 13 (43.3%) of them belongs to the age group between 41-60 years, 10 (33.3%) of them belongs to the age group between 61-80 years,2 of them belongs to the age group of above 80 years . In control group 8(26.6 %) of them belongs to the age group between 21-40 years, 12 (40%) of them belongs to the age group between 41-60 years, 10 (33.3%) of them belongs to the age group between 61-80 years,2 of them belongs to the age group of 61-80 years.

Distribution of patients receiving chemotherapy according to gender shows that in study group 18 (60%) were males, 12 (40%) were females. In control group 21 (70%) were males, 9(30%) were females.

Distribution of patients receiving chemotherapy according to place of residence shows that in study group 11 (36.66%) of them belongs to the rural areas, 13 (43.3%) of them belongs to the semi – rural areas, 4 (13.3%) of them belongs to the urban areas, 2(6.66%) of them belongs to the semi – urban areas. In control group 18(60 %) of them belongs to the rural areas, 8(26.66%) of them belongs to the semi- rural areas, 4(13.33%) of them belongs to the semi- urban areas.

Distribution of patients receiving chemotherapy according to religion shows that in study group 14 (46.67%) were belongs to Hindu religion, 16 (53.33%) were belongs to Christian. In control group 18(60%) were belongs to Hindu religion, 12(40%) belongs to Christian.

Distribution of patients receiving chemotherapy according to type of family in study group 6(20%) belonged to joint family, 24(80%) belongs to nuclear family. In control group 4 (13.33%) belongs to joint family, 26(86.67%) belonged to nuclear family.

Distribution of patients receiving chemotherapy according to type of family in study group 6(20%) belonged to joint family, 24(80%) belongs to nuclear family. In control group 4 (13.33%) belongs to joint family, 26(86.67%) belonged to nuclear family.

Distribution of patients receiving chemotherapy according to marital status in study group 23(76.66%) belonged to married, 3(10%) belonged to unmarried and 4(13.33%) belonged to widow/widower. In control group19 (63.33 %) belonged to married, 6 (20%) belonged to unmarried and 5(16.6 %) belonged to widow/widower.

Distribution of patients receiving chemotherapy according to educational status in study group 13 (43.33%) belonged to illiterate, 9(30%) belonged to primary, 5(16.66%) belonged to higher secondary and 3(10%) belonged to graduate and others. In control group 25(83.33%) belonged to illiterate, 3 (10%)

Distribution of patients receiving chemotherapy according to dietary pattern in study group 18 (60%) were vegetarian and 12 (40%) were non vegetarian. In control group19 (63.33 %) were vegetarian and 11(36.67 %) were non vegetarian.

Distribution of patients receiving chemotherapy according to duration of illness shows that in study group 16 (53.33%) had 0-12 months of duration, 11(36.67%) had 13-24 months of duration, and 3(10%) had 25-36 months of duration. In control group 19 (56.6%) had 0-12 months of duration, 10 (33.3%) had 13-24 months of duration, and 3(10%) had 25-36 months of duration.

Distribution of patients receiving chemotherapy according to their cycle of chemotherapy shows that in study group 19 (63.33%) had first cycle of chemotherapy, 7(23.33 %) had second cycle of chemotherapy ,4(13.33%)had third cycle of chemotherapy. In control group 13 (43.3%) had first cycle of chemotherapy, 12 (40%) had second cycle of chemotherapy, 5(16.6 %) had third

Distribution of patients receiving chemotherapy according to their occupation in study group 4 (13.33%) were government worker, 3(10%) were private worker, 12(40%) were self worker and 11(36.67%) were un employees. In control group 7 (23.33%) were government worker, 12 (40%) were private worker, and 11(36.67%) were un employees.

Distribution of patients receiving chemotherapy according to their cycle of chemotherapy shows that in study group 14 (43.33%) had less than Rs5,000 per month, 11(36.67%) had Rs5,001-10,000 per month, 6(20%) had more than Rs10,001 per month. In control group 18(60%) had less than Rs5,000 per month, 8(26.67%) had Rs5,001-10,000 per month, 4(13.33%) had more than Rs10,001 per month.

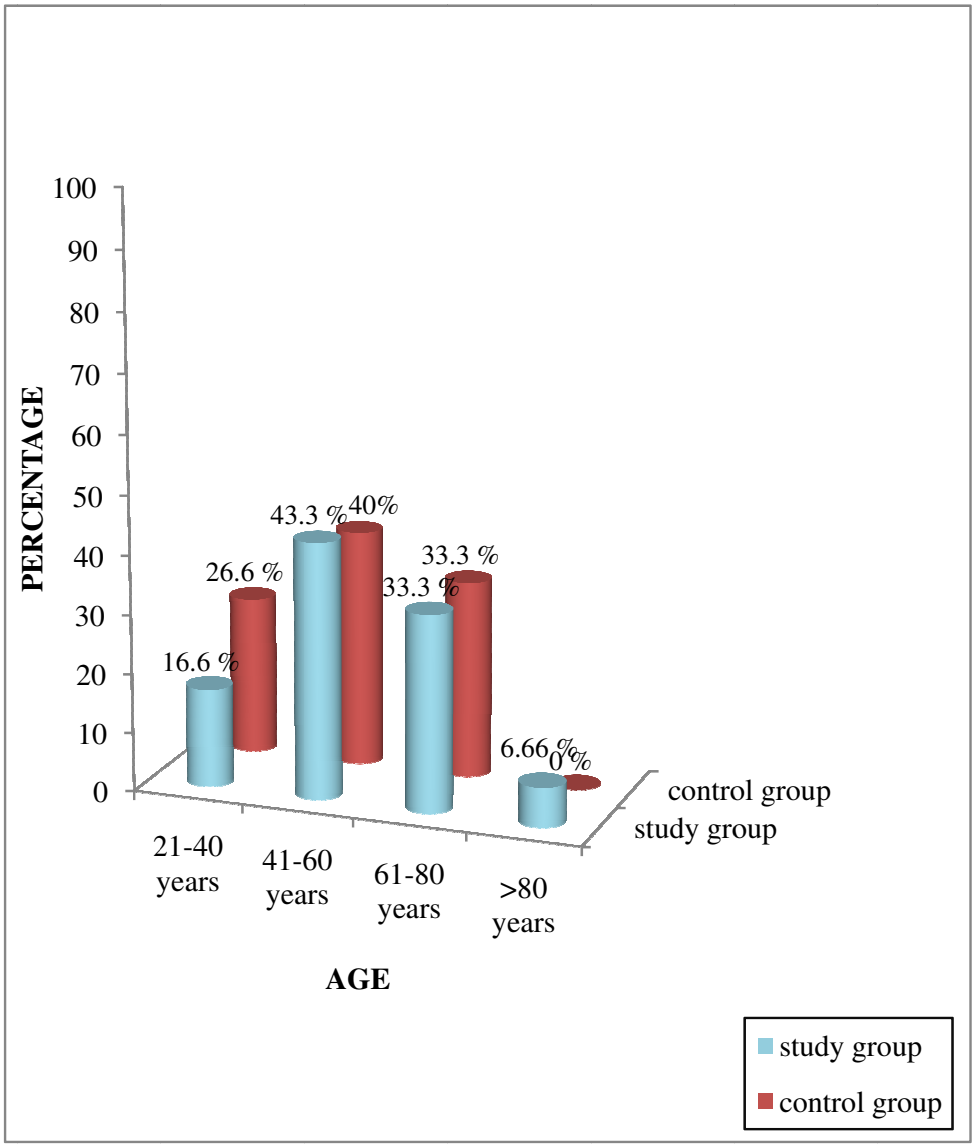

Fig-4.1: percentage distribution of patients receiving chemotherapy according to age

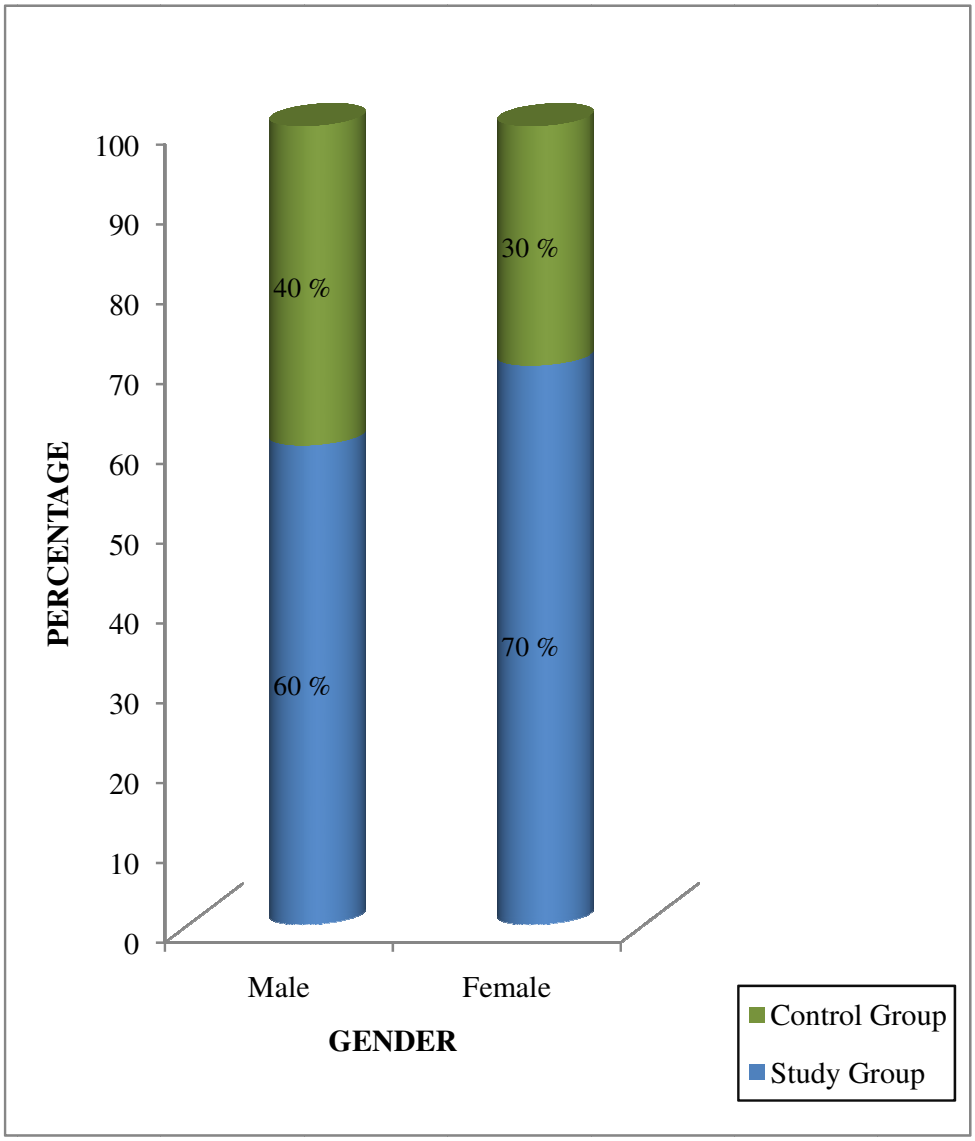

Fig-4.2: percentage distribution of patients receiving chemotherapy according to gender

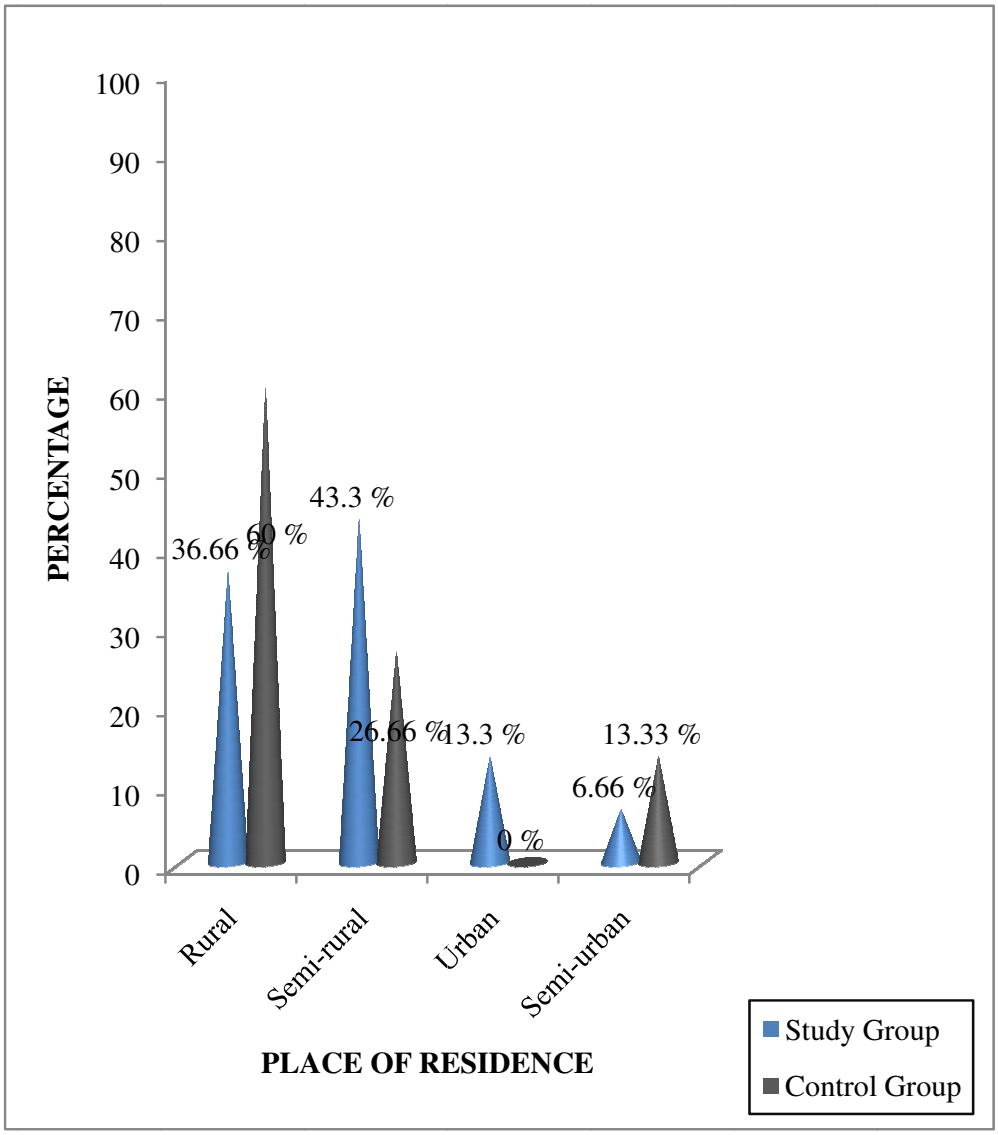

Fig-4.3: percentage distribution of patients receiving chemotherapy according to place of residence

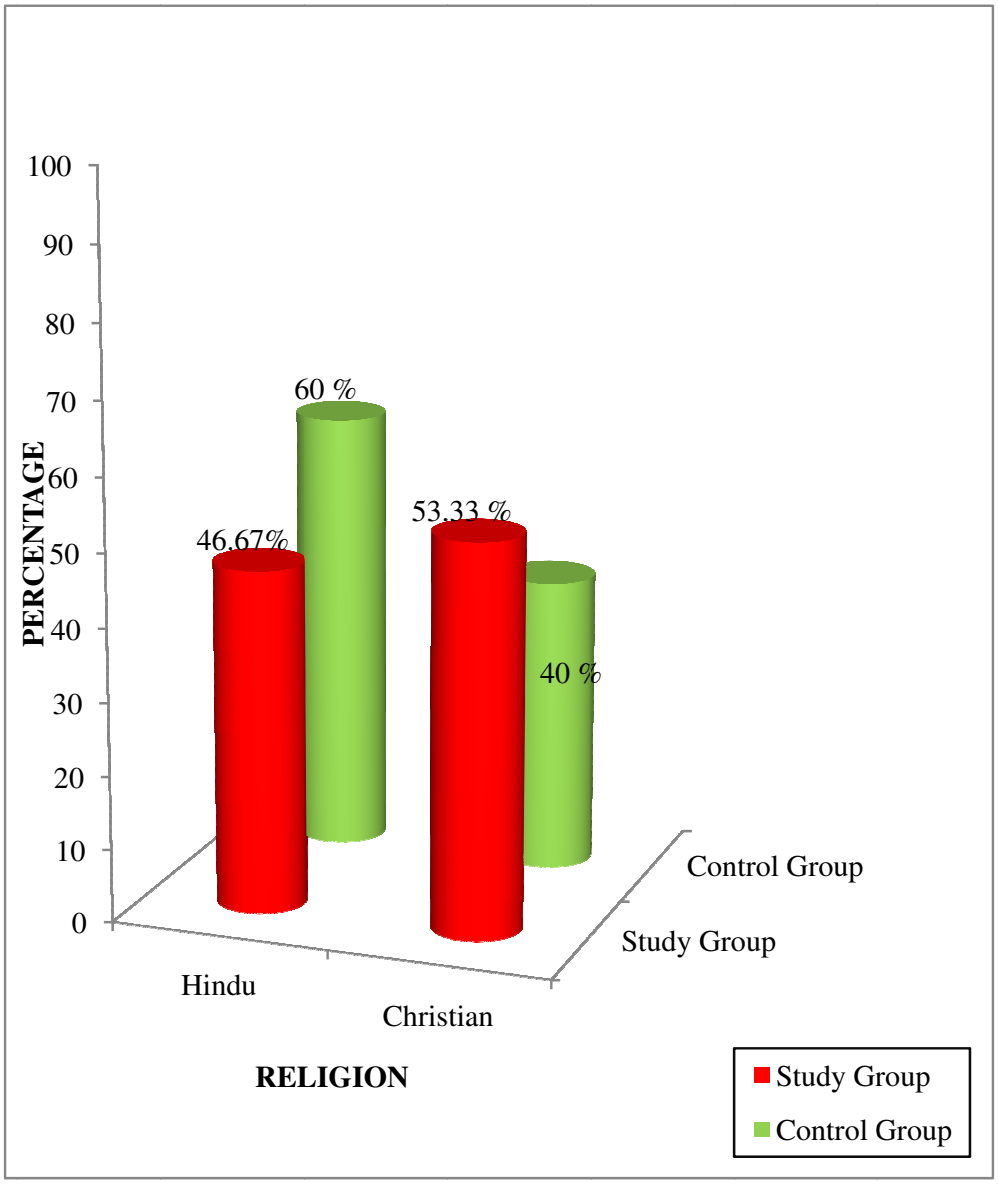

Fig-4.4: percentage distribution of patients receiving chemotherapy according to religion

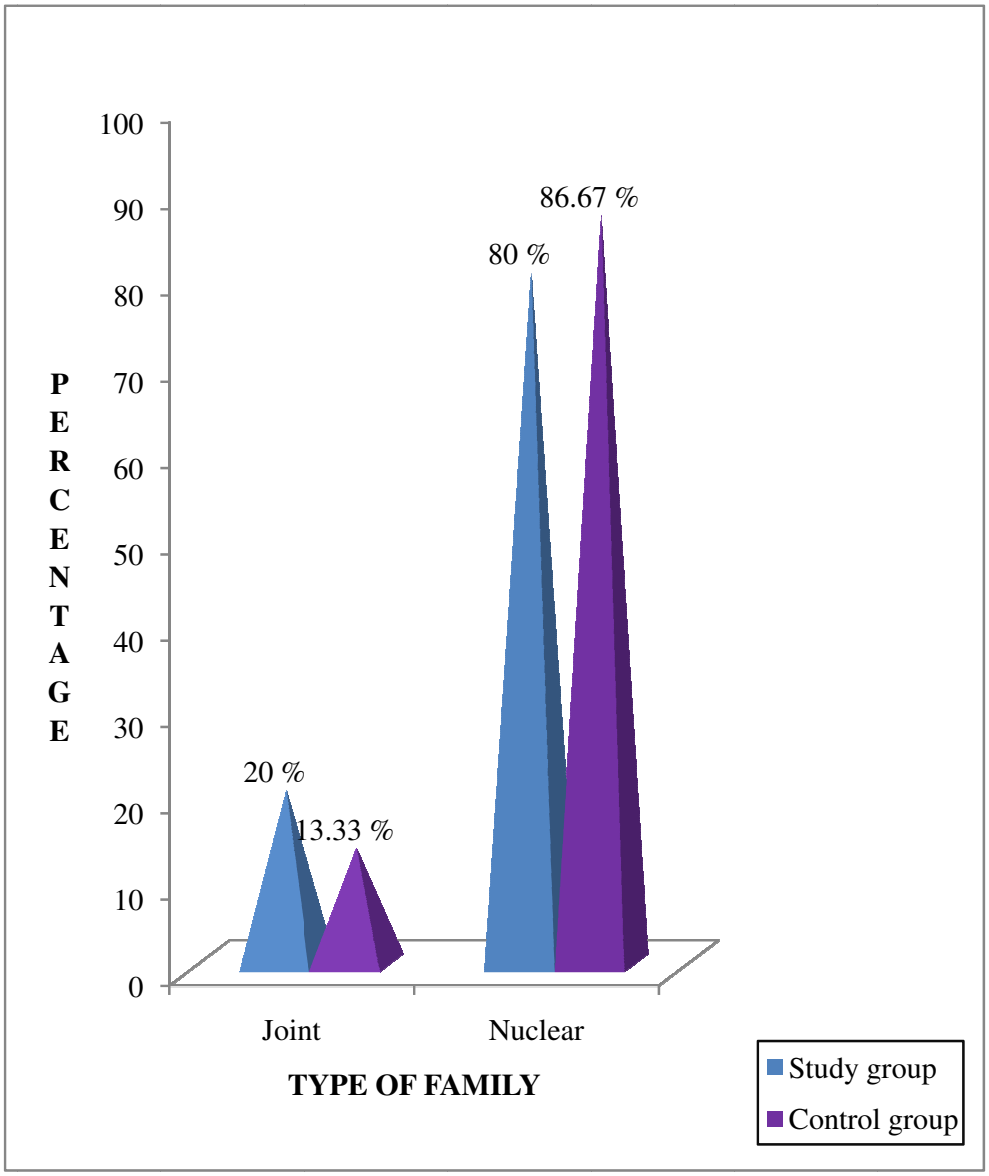

Fig-4.5: percentage distribution of patients receiving chemotherapy according to the type of family

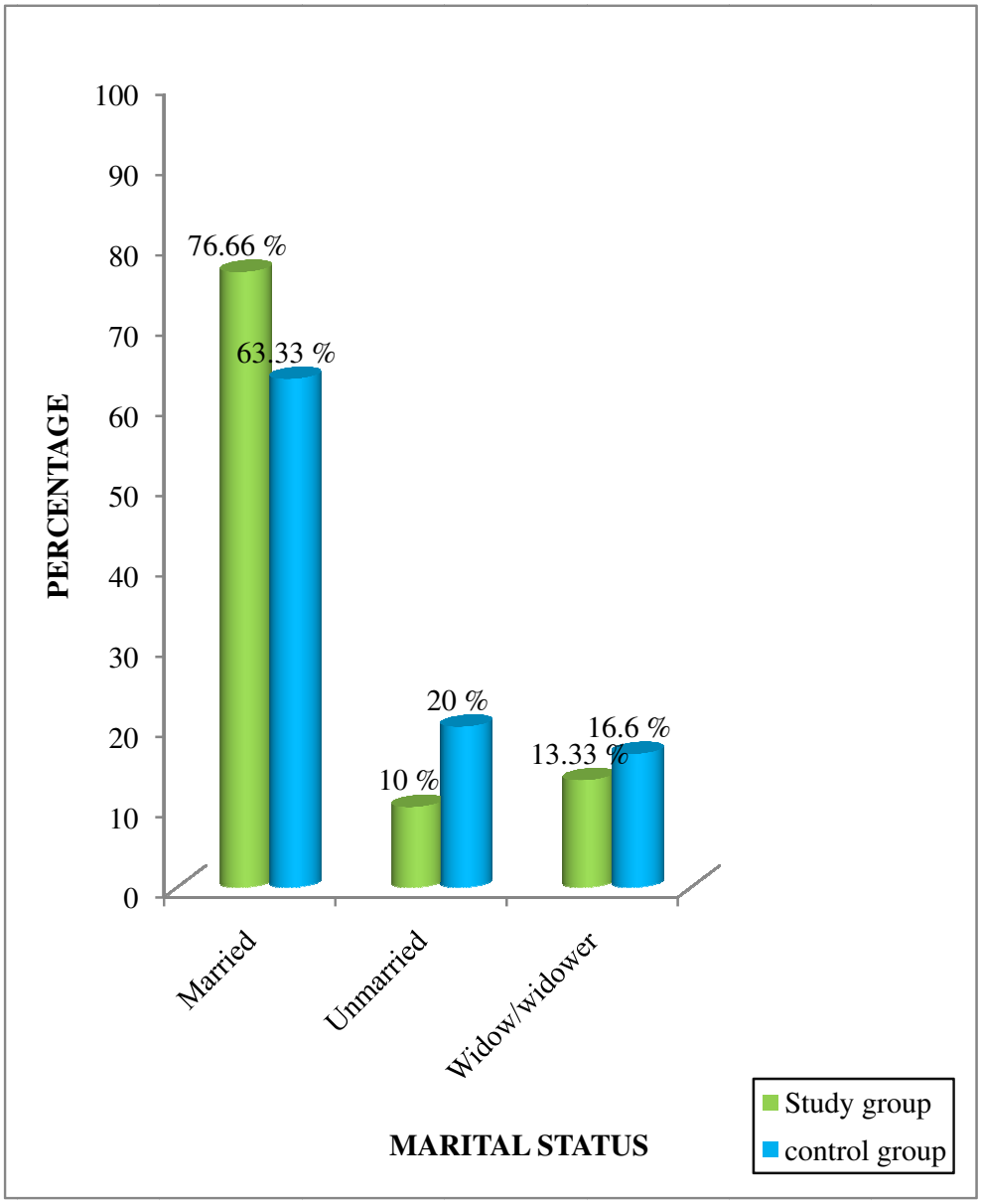

Fig-4.6: percentage distribution of patients receiving chemotherapy according to the marital status

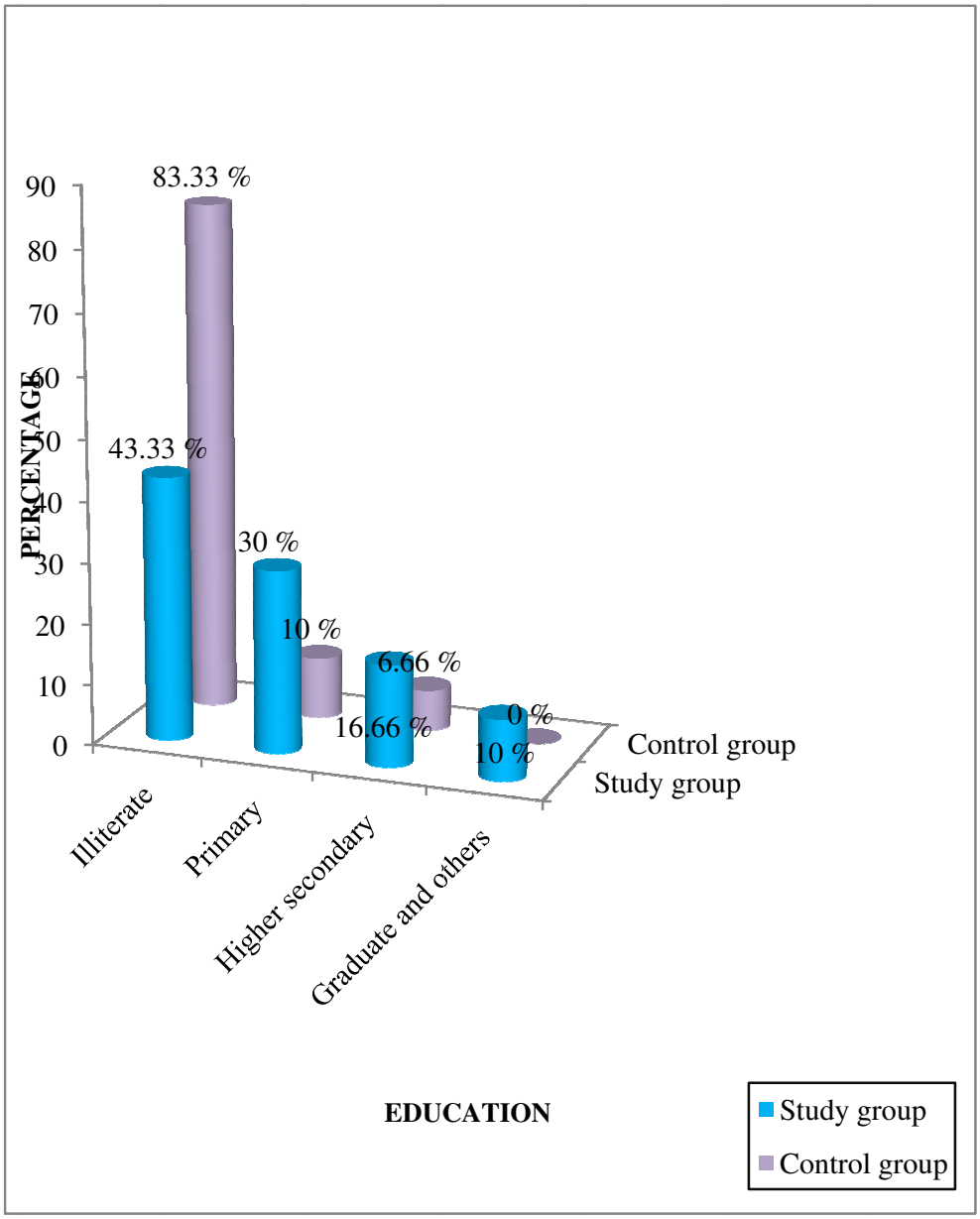

Fig-4.7: percentage distribution of patients receiving chemotherapy according to the education

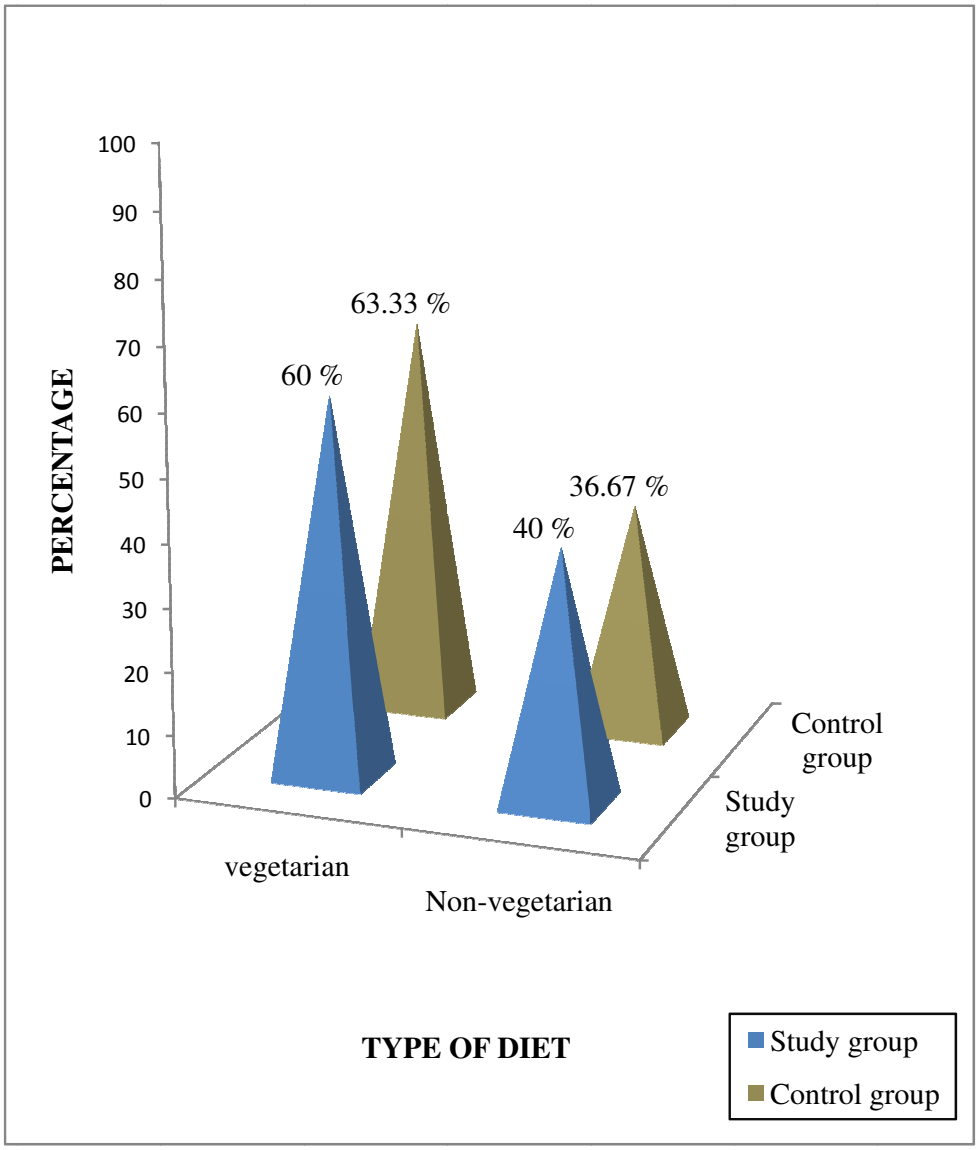

Fig-4.8: percentage distribution of patients receiving chemotherapy according to the type of diet

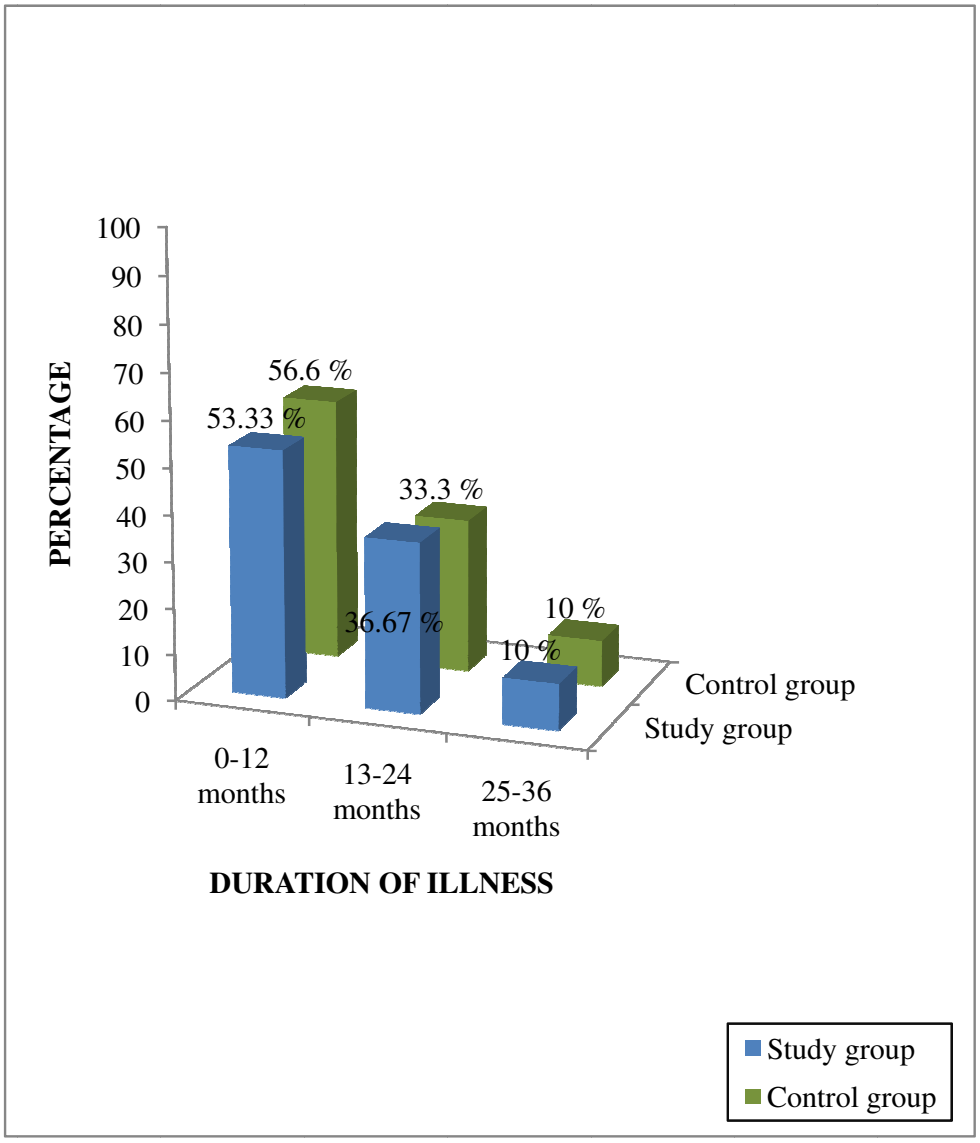

Fig-4.9: percentage distribution of patients receiving chemotherapy of according to duration of illness

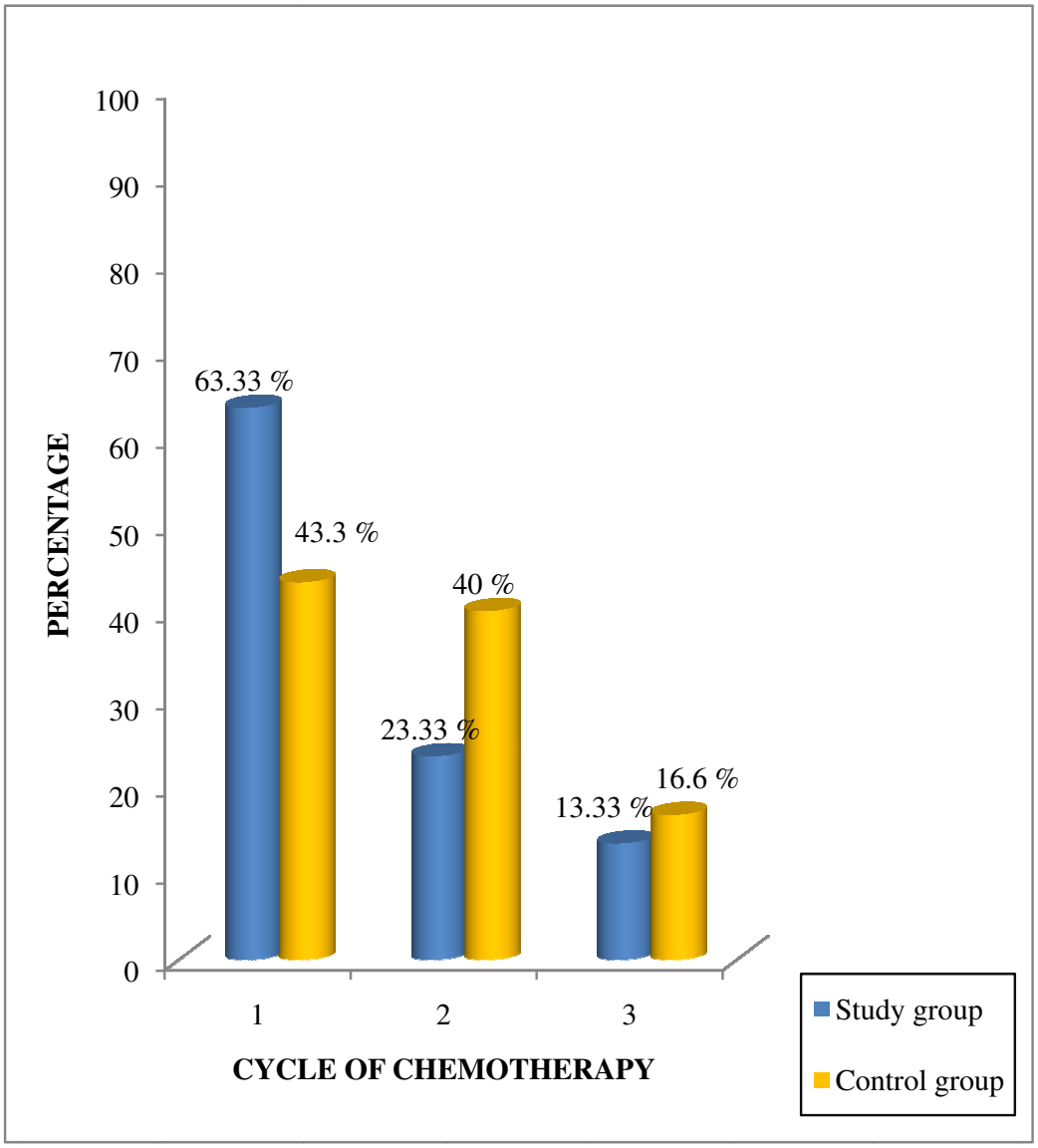

Fig-4.10: percentage distribution of patients receiving chemotherapy according to cycle of chemotherapy

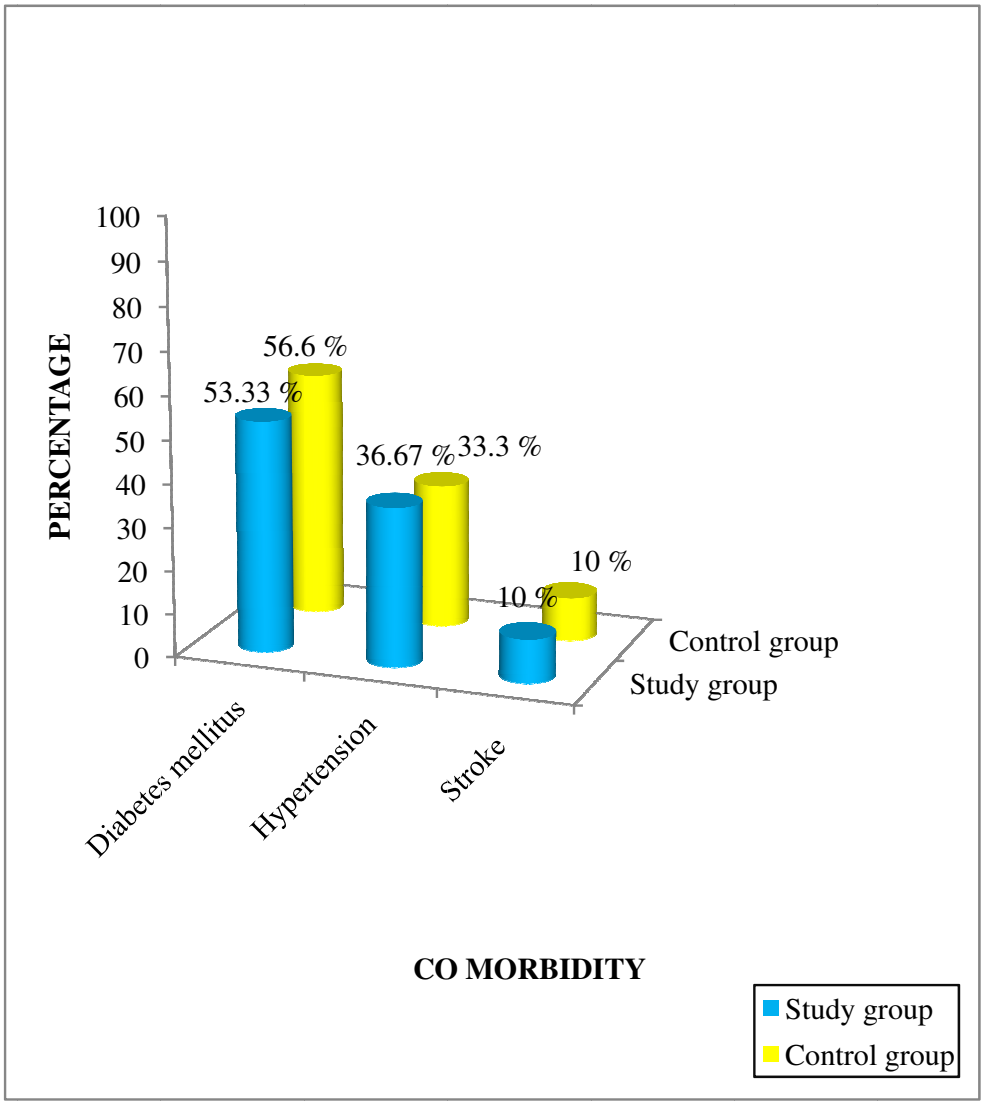

Fig-4.11: percentage distribution of patients receiving chemotherapy according to co morbidity

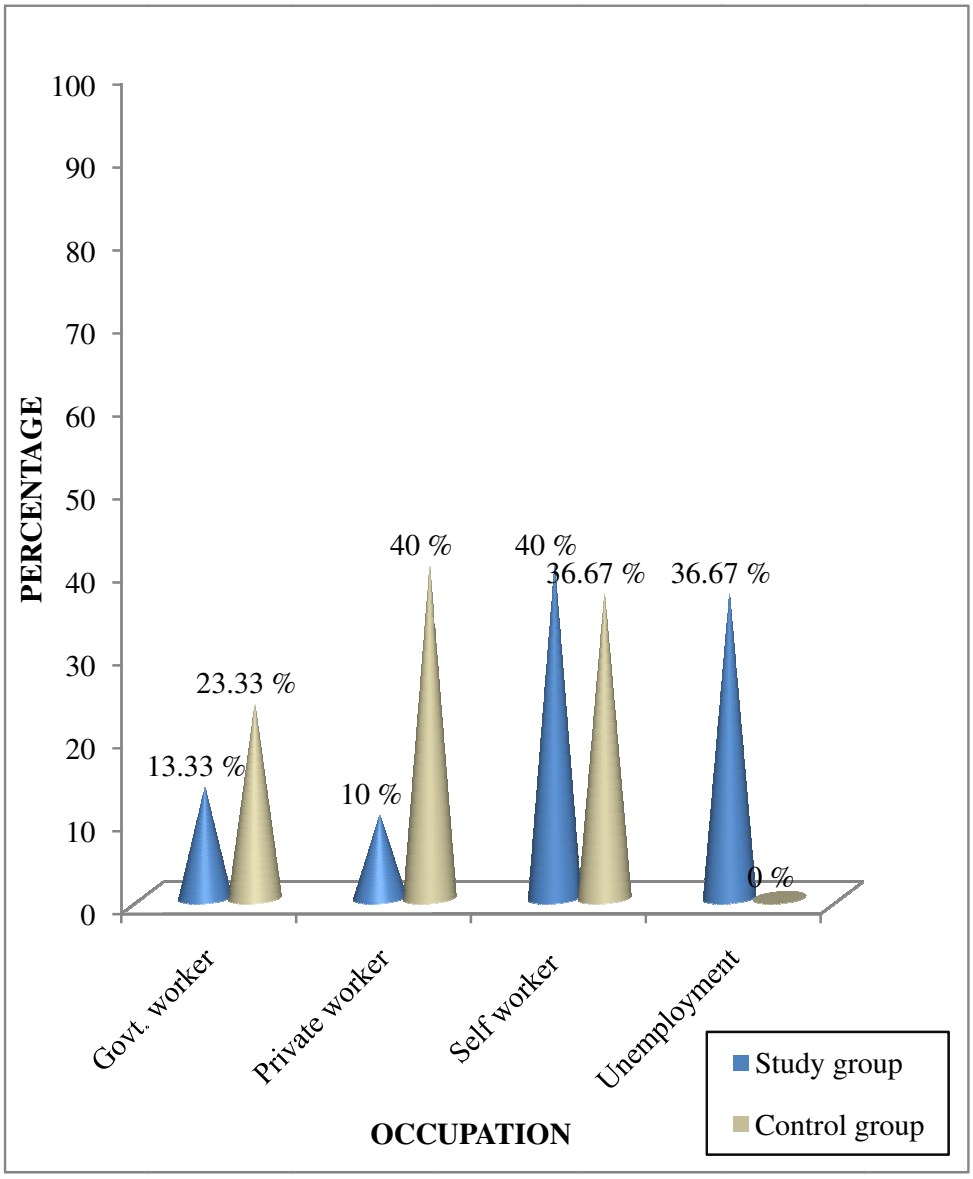

Fig-4.12: percentage distribution of patients receiving chemotherapy according to occupation

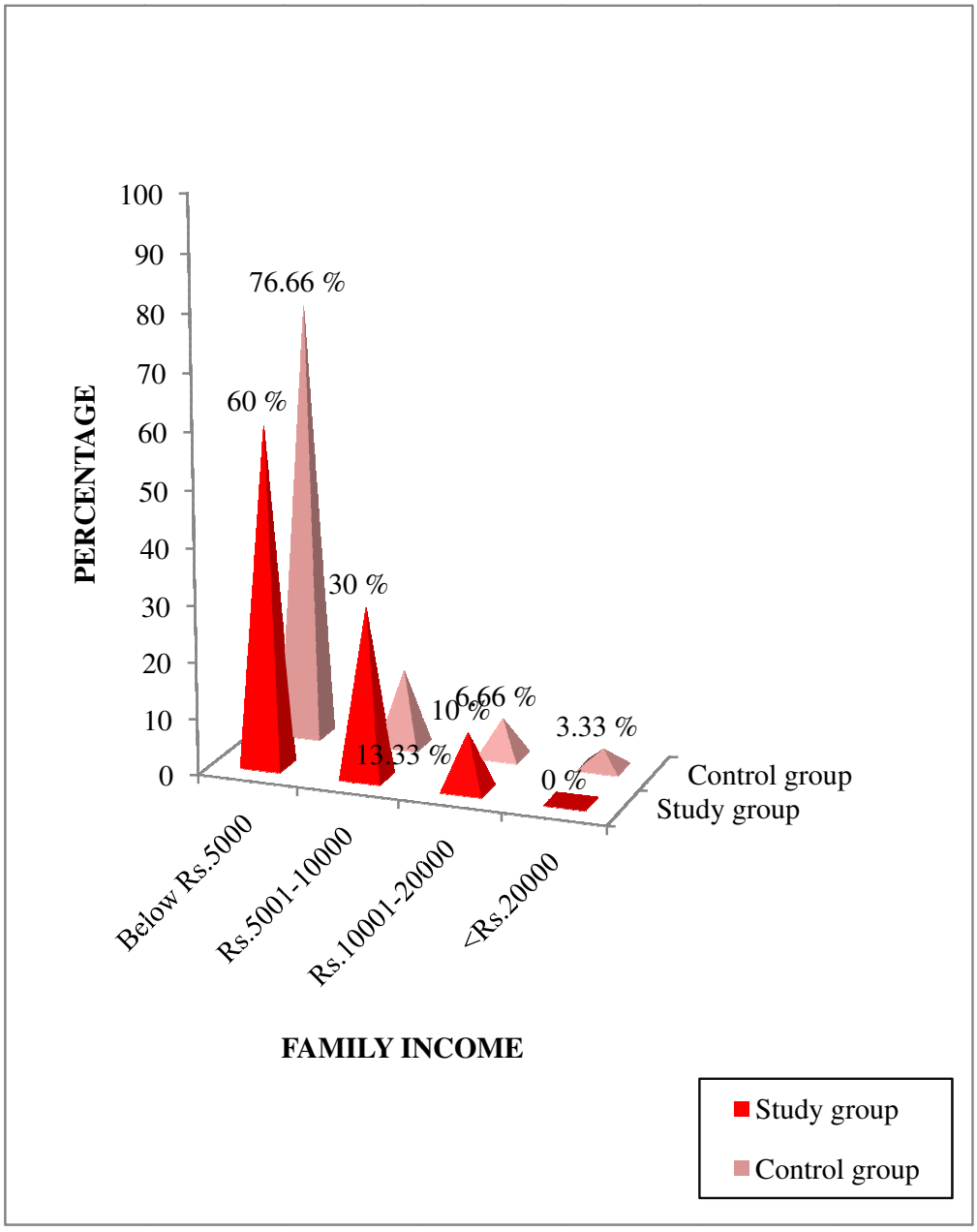

Fig-4.13: percentage distribution of patients receiving chemotherapy according to family income

SECTION-B

I. DISTRIBUTION OF PATIENTS RECEIVING CHEMOTHERAPY ACCORDING TO THE LEVEL OF FATIGUE BEFORE INTERVENTION

Table-4.2 Frequency and percentage distribution of patients receiving chemotherapy according to the level of fatigue in study and control group before intervention

n=60

S. No	Level of fatigue	Study group n=30		Control group n=30	
		Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
1	No fatigue	0	0	0	0
2	Mild fatigue	0	0	0	0
3	Moderate fatigue	4	13.3	3	10
4	Extreme fatigue	26	87	27	90
5	Worst fatigue	0	0	0	0

Table 4.2 represent, during pre test, in study group none of them had no and mild level of fatigue, 4(13.3%) had moderate fatigue and 26(87%) had severe fatigue. In control group none of them had no and mild level of fatigue, 3(10%) had moderate fatigue, 27(90%) had severe fatigue, none of them had worst level of fatigue.

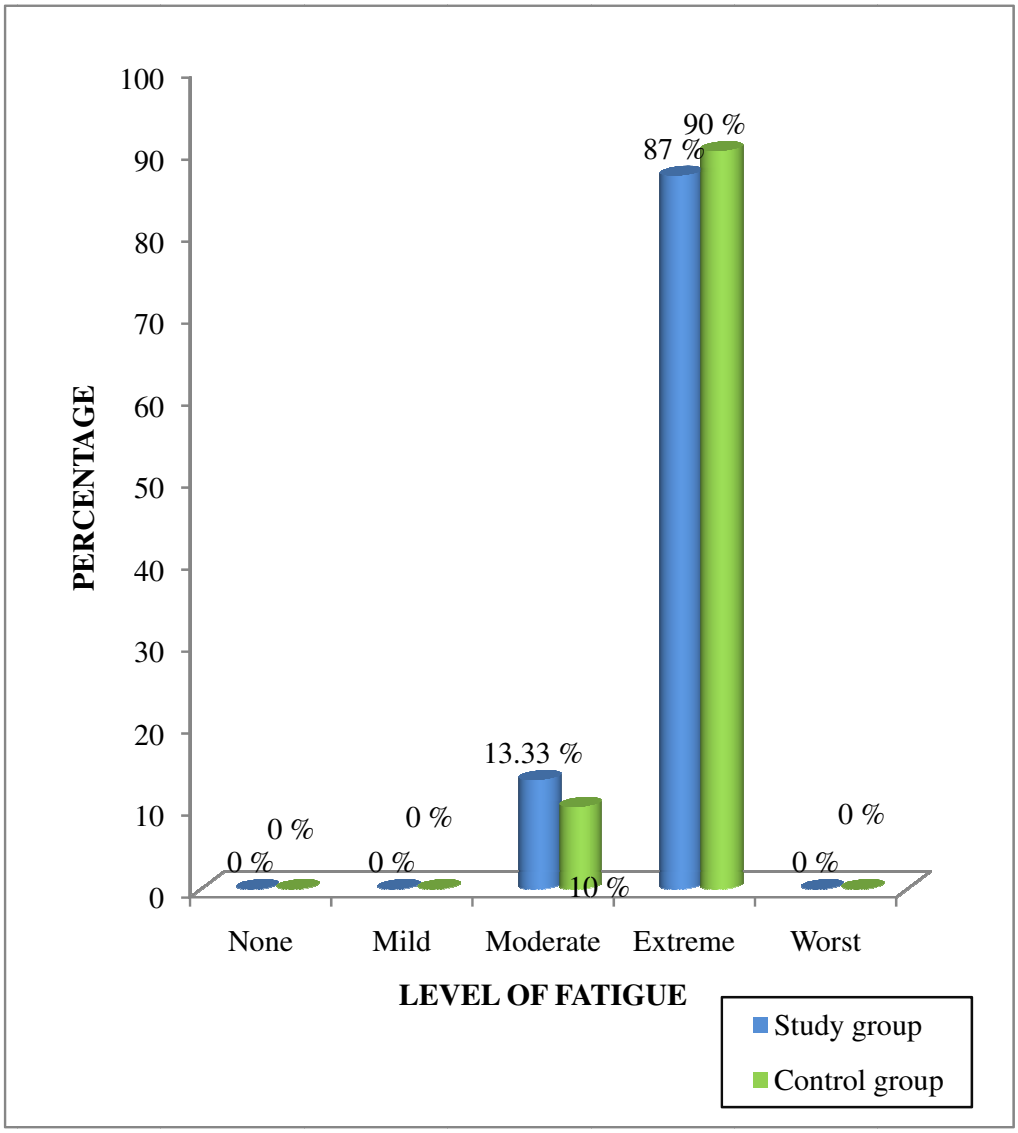

Fig-4.14: percentage distribution of patients receiving chemotherapy according to the level of fatigue before intervention

SECTION:B

I. DISTRIBUTION OF PATIENTS RECEIVING CHEMOTHERAPY ACCORDING TO THE LEVEL OF INSOMNIA BEFORE INTERVENTION

Table-4.3 Frequency and percentage distribution of patients receiving chemotherapy according to the level of insomnia in study group and control group before intervention

n=60

S.No	Level of insomnia	Study group n=30		Control group n=30	
		Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
1	No insomnia	0	0	0	0
2	Mild insomnia	0	0	0	0
3	Moderate insomnia	11	36.67	12	40
4	Severe insomnia	19	63.33	18	60

Table 4.3 represent, during pre test, in study group none of them had no and mild level of insomnia, 11(36.67%) had moderate insomnia and 19(63.33%) had severe insomnia. In control group none of them had no and mild level of insomnia, 12(40%) had moderate pain insomnia and 18(60%) had severe insomnia.

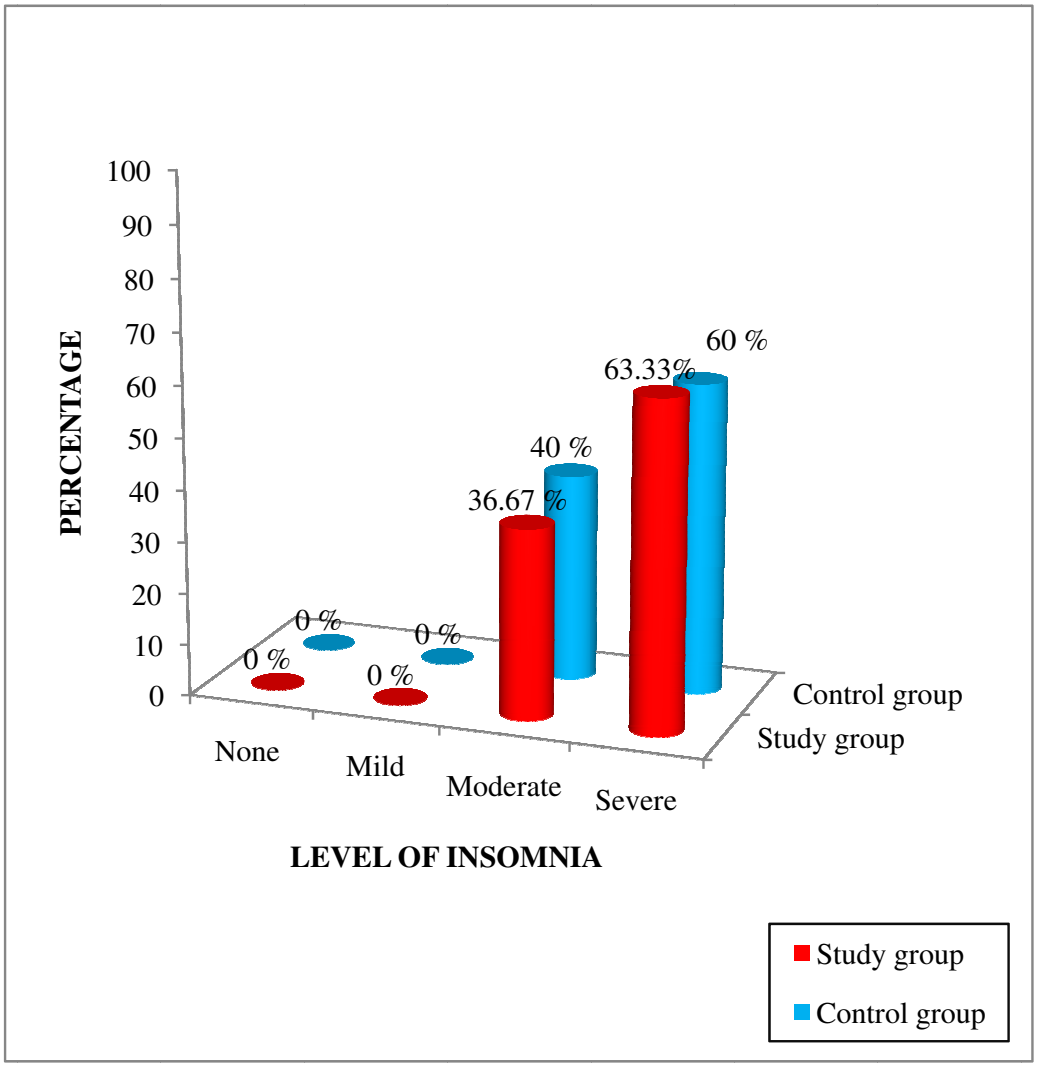

Fig-4.15: percentage distribution of patients receiving chemotherapy according to the level of insomnia before intervention

SECTION B

II. DISTRIBUTION OF PATIENTS RECEIVING CHEMOTHERAPY ACCORDING TO THE LEVEL OF FATIGUE AFTER INTERVENTION

Table-4.4.Frequency and percentage distribution of patients receiving chemotherapy according to the level of fatigue in study and control group after intervention

n=60

S.No	Level of fatigue	Study group n=30		Control group n=30	
		Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
1	No fatigue	0	0	0	0
2	Mild fatigue	0	0	0	0
3	Moderate fatigue	26	87	27	90
4	Severe fatigue	4	13.3	3	10
5	Worst fatigue	0	0	0	0

Table 4.4 represent, during post test, in study group none of them had no and mild level of fatigue, 26(87%) had moderate fatigue and 4(13.33%) had severe fatigue. In control group none of them had no and mild level of fatigue, 27(90%) had moderate fatigue, 3(10%) had severe fatigue, none of them had worst level of fatigue.

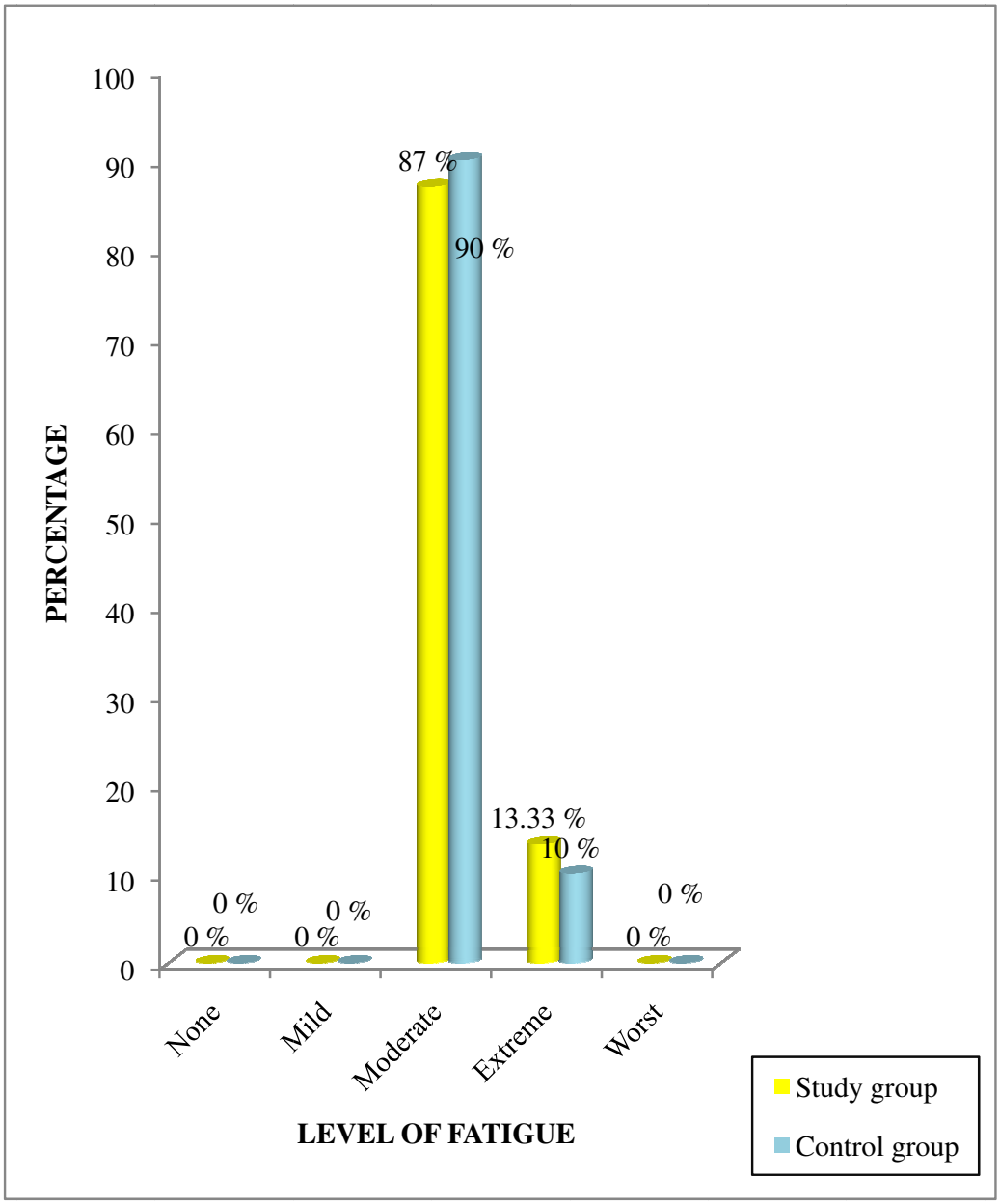

Fig-4.16: percentage distribution of patients receiving chemotherapy according to the level of fatigue after intervention

SECTION B

II.DISTRIBUTION OF PATIENTS RECEIVING CHEMOTHERAPY ACCORDING TO THE LEVEL OF INSOMNIA AFTER INTERVENTION

Table-4.5.Frequency and percentage distribution of patients receiving chemotherapy according to the level of insomnia in study and control group after intervention

n=60

S.No	Level of insomnia	Study group n=30		Control group n=30	
		Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
1	No insomnia	0	0	0	0
2	Mild insomnia	0	0	0	0
3	Moderate insomnia	16	46.67	24	80
4	Severe insomnia	14	53.3	6	20

Table 4.5 represent, during post test, in study group none of them had no and mild level of insomnia, 16(46.67%) had moderate insomnia and 14(53.33%) had severe insomnia. In control group none of them had no and mild level of insomnia, 24(80%) had moderate pain insomnia and 6(20%) had severe insomnia.

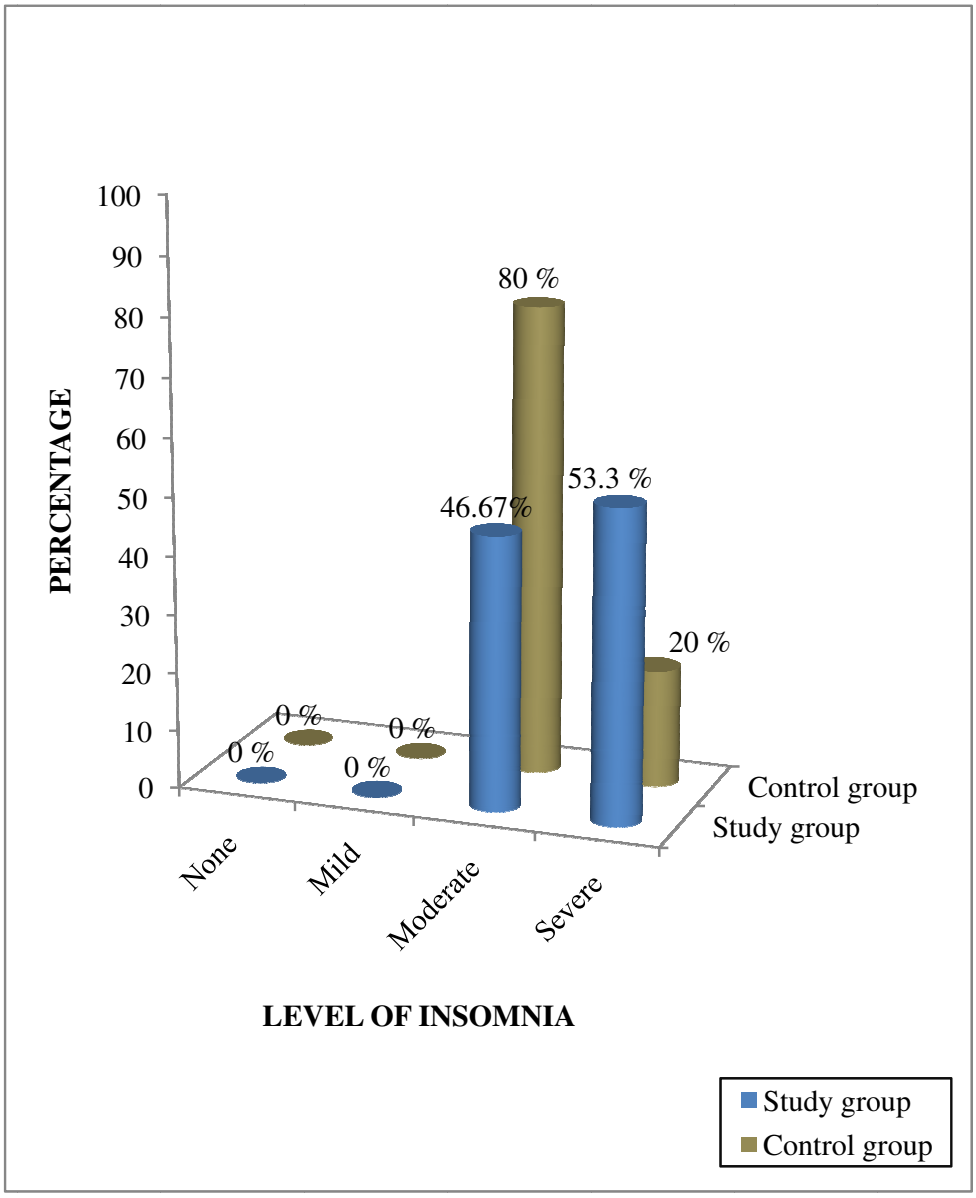

Fig-4.17: percentage distribution of patients receiving chemotherapy according to the level of insomnia after intervention

SECTION C

I. COMPARISON OF PRE TEST AND POST TEST LEVEL OF FATIGUE AMONG PATIENTS RECEIVING CHEMOTHERAPY IN STUDY GROUP AND CONTROL GROUP

Table-4.6 Mean, standard deviation and paired‘t’ value on level of fatigue among patients receiving chemotherapy in study group and control group after intervention

n=60

S.No	Group	Mean	SD	Mean difference	Df	Paired ‘t’ value
1	Study group(n=30)					
	Pre test	6.13	1.85	1.26	29	3.73*
	Post test	4.86	2.01			
2	Control group(n=30)					
	Pre test	6	1.8	0.3	29	0.93*
	Post test	5.83	2.21			

Table value t=1.69, *Significant at p<0.05 level

Table-4.6 represents, the mean score on level of fatigue among patients receiving chemotherapy in study group was 6.13 in pre test and 4.86 in post test. The estimated paired‘t’ value was 3.73* which is significant at p<0.05. It shows that warm water foot bath was effective in reducing the level of fatigue among patients receiving chemotherapy. Hence the research hypothesis (H_1) is accepted.

In control group the mean score on level of fatigue among patients receiving chemotherapy was 6 in pre test and 5.83 in post test. The estimated paired‘t’ value was 0.93 which is significant at p<0.05.

SECTION C

I.Table-4.7. Mean, standard deviation and paired‘t’ value on level of insomnia among patients receiving chemotherapy in study group and control group after intervention

n=60

S.No	Group	Mean	SD	Mean difference	Df	Paired ‘t’ value
1	Study group(n=30) Pre test Post test	 18.7 18.9	 1.9 1.85	0.7	29	2.02*
2	Control group(n=30 Pre test Post test	 19.3 19.7	 1.23 1.75	0.2	29	0.89*

Table value t=1.69, *Significant at p<0.05 level.

Table-4.7 represents, the mean score on level of fatigue among patients receiving chemotherapy in study group was 18.7 in pre test and 18.9 in post test. The estimated paired‘t’ value was 2.02***** which is significant at p<0.05. It shows that warm water foot bath was effective in reducing the level of fatigue among patients receiving chemotherapy. Hence the research hypothesis (H_1) is accepted.

In control group the mean score on level of fatigue among patients receiving chemotherapy was 19.3 in pre test and19.7 in post test. The estimated paired‘t’ value was 0.89.

SECTION-C

I. Table-4.8 Mean, standard deviation and unpaired‘t’ value on level of fatigue among patients receiving chemotherapy in study and control group after intervention

n=60

S. No	Group	Mean	SD	Mean difference	df	Unpaired ‘t’ value
1	Study group n=30	4.86	0.98	1.2	58	3.36*
2	Control group n=30	5.7	1.21			

Table value t=1.96, *Significant at p<0.05 level

Table-4.8 represents, the mean score on level of fatigue in patients receiving chemotherapy in study group was 4.86 and in control group was 5.7. The estimated unpaired‘t’ value was 3.36* which is significant at p<0.05. It shows that warm water foot bath was effective in reducing the level of fatigue in patients receiving chemotherapy.

I.Table-4.9 Mean, standard deviation and unpaired‘t’ value on level of insomnia among patients receiving chemotherapy in study and control group after intervention

n=60

S. No	Group	Mean	SD	Mean difference	Df	Unpaired ‘t’value
1	Study group n=30	18	3.5	1.7	58	3.54*
2	Control group n=30	19.7	3.9			

Table value t=1.96, *Significant at p<0.05 level

Table-4.9 represents, the mean score on level of insomnia among patients receiving chemotherapy in study group was 18 and in control group were 19.7. The estimated unpaired‘t’ value was 3.54***** which is significant at p<0.05. It shows that warm water footbath was effective in reducing the level of insomnia in patients receiving chemotherapy.

SECTION: C

II.Table-4.10.ASSOCIATION BETWEEN THE POST TEST LEVEL OF FATIGUE AMONG PATIENTS RECEIVING CHEMOTHERAPY IN STUDY AND CONTROL GROUP WITH SELECTED DEMOGRAPHIC AND CLINICAL VARIABLES

n=60

S. No	Demographic and clinical variables	Study group n=30			Control group n=30		
		Df	χ^2	Table value	Df	χ^2	Table value
1	Age	9	4.94	I6.92	9	12.40	16.92
2	Gender	3	9.46	7.82	3	1.08	7.82
3	Place of residence	9	3.39	16.92	9	7.72	16.92
4	Religion	9	8.74	16.92	9	8.74	16.92
5	Type of family	9	2.66	16.92	9	4.75	16.92
6	Marital status	9	1.98	16.92	9	12.89	16.92
7	Education	9	0.35	16.92	9	0.01	16.92
8	Type of diet	3	4.94	7.82	3	6.67	7.82
9	Duration of illness	9	1.79	16.92	9	5.67	16.92
10	Cycle chemotherapy	9	2.09	16.92	9	0.60	16.92
11	Co morbidity	9	0.71	16.92	9	10.93	16.92
12	Occupation	9	1.23	16.92	9	6.25	16.92
13	Family income	9	1.79	16.92	9	2.73	16.92

The table 4.10 shows that in study group, for fatigue on considering the age, chi square value was 4.94 and the table value at degree of freedom nine was 16.92.As per the gender the chi square was 9.46 and the table value at degree of freedom three was 7.82. Considering the place of residence, chi square value was 3.39 and the table value at degree of freedom nine was 16.92. As per religion, the chi square was 8.74 and the table value at degree of freedom nine was 16.92. Considering the type of family, chi square value was 2.66 and the table value at degree of freedom six was 12.59. As per marital status the chi square was 1.98 and the table value at degree of freedom nine was 16.92. Considering the education, chi square value was 0.35 and the table value at degree of freedom nine was 16.92. Considering the type of diet the chi square was 4.94 and the table value at degree of freedom three was 7.82. As per duration of illness the chi square value was 1.79 at degree of freedom nine was 16.92.

The table4. 10 shows that in control group, for insomnia on considering the age, chi square value was 12.40 and the table value at degree of freedom nine was 16.92.As per the gender the chi square was 1.08 and the table value at degree of freedom three was 7.82. Considering the place of residence, chi square value was 7.72 and the table value at degree of freedom nine was 16.92. As per religion, the chi square was 8.74 and the table value at degree of freedom nine was 16.92. Considering the type of family, chi square value was 4.75 and the table value at degree of freedom six was 12.59. As per marital status the chi square was 12.89 and the table value at degree of freedom nine was 16.92. Considering the education, chi square value was 0.01 and the table value at degree of freedom nine was 16.92. Considering the type of diet the chi square was 6.67 and the table value at degree of freedom three was 7.82. As per duration of illness the chi square value was 5.67 at degree of freedom nine was 16.92. As per cycle of chemotherapy the chi square was 0.60 and the table value at degree of freedom nine was 16.92. Considering the co morbidity, chi square value was 10.93 and the table value at degree of freedom nine was 16.92. Considering the occupation the chi square was 6.25 and the table value at degree of freedom nine was 16.92. As per family income the chi square value was 2.73 at degree of freedom nine was 16.92.

The table 4.10. reveals that there is no significant association ($p<0.05$) between the post test level of pain among patients receiving chemotherapy in experimental and control group with their selected demographic variables such as age, gender, place of residence, educational status, economic status, religion, type of family, dietary pattern, duration of illness, cycle of chemotherapy, co-morbidity, occupation, and family income at $p<.05$ level. Hence hypothesis is H2 is not accepted.

This chapter deal with data analysis and interpretation in the form of statistical value based on the objective. unpaired‘t’ test was used to compare the pre test and post test level of fatigue in experimental and control group. Chi square test was used to find out the association between the level of fatigue among patients receiving chemotherapy with their selected demographic and clinical variables in study and control group.

SECTION :B.

II.Table-4.11.ASSOCIATION BETWEEN THE POST TEST LEVEL OF INSOMNIA AMONG PATIENTS RECEIVING CHEMOTHERAPY IN STUDY GROUP AND CONTROL GROUP WITH SELECTED DEMOGRAPHIC AND CLINICAL VARIABLES

n=60

S. No	Demographic and clinical variables	Study group n=30			Control group n=30		
		Df	χ^2	Table value	Df	χ^2	Table value
1	Age	9	8.88	I6.92	9	10.5	16.92
2	Gender	3	4.87	7.82	3	3.67	7.82
3	Place of residence	9	3.42	16.92	9	6.53	16.92
4	Religion	9	5.76	16.92	9	3.98	16.92
5	Type of family	9	3.78	16.92	9	5.73	16.92
6	Marital status	9	2.65	16.92	9	11.23	16.92
7	Education	9	1.35	16.92	9	1.0	16.92
8	Type of diet	3	3.24	7.82	3	5.35	7.82
9	Duration of illness	9	3.78	16.92	9	5.27	16.92
10	Cycle of chemotherapy	9	2.45	16.92	9	1.09	16.92
11	Co morbidity	9	2.86	16.92	9	11.45	16.92
12	Occupation	9	2.23	16.92	9	7.87	16.92
13	Family income	9	2.51	16.92	9	5.76	16.92

The table 4.11 shows that in study group, for insomnia on considering the age, chi square value was 8.88 and the table value at degree of freedom nine was 16.92.As per the gender the chi square was 4.87 and the table value at degree of freedom three was 7.82. Considering the place of residence, chi square value was 3.42 and the table value at degree of freedom nine was 16.92. As per religion, the chi square was 5.76 and the table value at degree of freedom nine was 16.92. Considering the type of family, chi square value was3.78 and the table value at degree of freedom six was 12.59. As per marital status the chi square was 2.65 and the table value at degree of freedom nine was 16.92. Considering the

education, chi square value was 1.35 and the table value at degree of freedom nine was 16.92. Considering the type of diet the chi square was 4.94 and the table value at degree of freedom three was 3.24. As per duration of illness the chi square value was 3.78 at degree of freedom nine was 16.92. As per marital status the chi square was 2.65 and the table value at degree of freedom nine was 16.92. Considering the education, chi square value was 1.35 and the table value at degree of freedom nine was 16.92. Considering the type of diet the chi square was3.24 and the table value at degree of freedom three was 3.24. As per duration of illness the chi square value was 3.78 at degree of freedom nine was 16.92. As per cycle of chemotherapy the chi square was 2.45 and the table value at degree of freedom nine was 16.92. Considering the co- morbidity, chi square value was 2.86 and the table value at degree of freedom nine was 16.92. Considering the occupation the chi square was 2.23 and the table value at degree of freedom three was 3.24. As per family income the chi square value was 2.51 at degree of freedom nine was 16.92.

The table 4.11 shows that in control group, for insomnia on considering the age, chi square value was 10.50 and the table value at degree of freedom nine was 16.92.As per the gender the chi square was3.67 and the table value at degree of freedom three was 7.82. Considering the place of residence, chi square value was 6.53 and the table value at degree of freedom nine was 16.92. As per religion, the chi square was 3.98 and the table value at degree of freedom nine was 16.92. Considering the type of family, chi square value was5.73 and the table value at degree of freedom six was 12.59. As per marital status the chi square was 11.23 and the table value at degree of freedom nine was 16.92. Considering the education, chi square value was 1.00 and the table value at degree of freedom nine was 16.92. Considering the type of diet the chi square was5.35 and the table value at degree of freedom three was 7.82. As per duration of illness the chi square value was 5.27 at degree of freedom nine was 16.92. As per cycle of chemotherapy the chi square was 1.09 and the table value at degree of freedom nine was 16.92. Considering the co morbidity, chi square value was 11.45 and the table value at degree of freedom nine was 16.92. Considering the occupation the

chi square was 7.87 and the table value at degree of freedom nine was 16.92. As per family income the chi square value was 5.76 at degree of freedom nine was 16.92.

The table 4.11 reveals that there is no significant association ($p<0.05$) between the post test level of insomnia among patients receiving chemotherapy in study and control group with their selected demographic and clinical variables such as age, educational status, economic status, religion, type of family, living area, dietary pattern, duration of illness,cycle of chemotherapy , co-morbidity, occupation, and family income at $p<.05$ level. Hence hypothesis is H_2 is not accepted.

This chapter deal with data analysis and interpretation in the form of statistical value based on the objective. unpaired‘t’ test was used to compare the pre test and post test level of insomnia in study and control group. Chi square test was used to find out the association between the level of insomnia among patients receiving chemotherapy with their selected demographic and clinical variables in study and control group.

CHAPTER V

DISCUSSION

This quasi experimental study was done to evaluate the effectiveness of warm water footbath on level of fatigue and insomnia among patients receiving chemotherapy at selected Hospitals at Kanyakumari District.

Distribution of samples according to their demographic and clinical variables

The demographic profile in study group13 (43.3%) of them belongs to the age group between 41-60 years, 10 (33.3%) of them belongs to the age group between 61-80 years. Regarding gender 21 (40%) were females, 12(40%) were males. Regarding the place of residence13 (43.3%) of them belongs to the semi-rural areas, 11(36.66%) of them belongs to the rural areas. Regarding the religion 14 (46.67%) belongs to Hindu religion, 16(53.33%) belongs to Christian. Regarding the type of family 24(80%) belonged to nuclear family, 6 (20%) belonged to joint family. Marital status 23 (76.66%) belonged to married,4 (13.33%) belonged to widow and 3(10%) belonged to unmarried. As per educational status 13 (43.33%) were illiterate and 9 (30%) were completed primary education,5(16.66%) were completed higher secondary education . With regard to the dietary pattern 18 (60%) were vegetarian, 12 (40%) were non - vegetarian. As per duration of illness16 (53.33%) had 0-12 months of duration, 11 (36.67%) had 13-24 months of duration and 3 (10%) had 25-36 months of duration. As per cycle of chemotherapy 19(63.33%) of them belongs to first cycle of chemotherapy,7(23.33%) of them belongs to second cycle of chemotherapy. As per occupation 12(40%) were self worker, 11(36.67%) were un employees. With regard to the family income 14(43.33%) had less than Rs 5,000 per month, 11(36.67%) had Rs 5,001-10,000 per month.

In control group 12(40%) of them belongs to the age group between 41-60 years, 10 (33.3%) of them belongs to the age group between 61-80 years. Regarding gender 21 (70%) were males,9(30%) were females. Regarding the place of residence18(60%) of them belongs to the rural areas,8(26.66%) of them belongs to the semi- rural areas . Regarding the religion 18 (60%) belongs to

Hindu religion, 12(40%) belongs to Christian. Regarding the type of family 4(13.33%) belonged to nuclear family, 26 (86.67%) belonged to joint family. Marital status 19 (63.33%) belonged to married,4 (13.33%) belonged to widow and 6(20%) belonged to unmarried. As per educational status 25 (83.33%) were illiterate and 3 (10%) were completed primary education, 2(6.66%) were completed higher secondary education. With regard to the dietary pattern 19 (63.33%) were vegetarian, 11 (36.67%) were non -vegetarian. As per duration of illness19 (56.6%) had 0-12 months of duration, 10 (33.3%) had 13-24 months of duration and 3 (10%) had 25-36 months of duration. As per cycle of chemotherapy 13(43.3%) of them belongs to first cycle of chemotherapy,12(40%) of them belongs to second cycle of chemotherapy. As per occupation 7(23.33%) were self worker, 11(36.67%) were un employees. With regard to the family income 18(60%) had less than Rs 5000 per month, 8(26.67%) had Rs 5001-10000 per month.

The first objective is to assess and compare the pre test and post test level of fatigue and insomnia among patients receiving chemotherapy in study group and control group

In study group, during pre test 0 (0%) had no fatigue, 0 (0%) had mild fatigue, 4 (13.3%) had moderate fatigue, 26 (87%) had extreme fatigue, and 0 (0%) had worst level of fatigue. In control group 0 (0%) had no fatigue, 0(0%) had mild fatigue, 3 (10%) had moderate fatigue, 27 (90%) had extreme fatigue and 0 (0%) had worst fatigue.

During post test, in study group 0 (0%) had no fatigue, 0 (0%) had mild fatigue, 26 (87%) had moderate fatigue, 4(13.3%) had extreme fatigue and 0 (0%) had worst fatigue. In control group 0 (0%) had no fatigue, 0 (0%) had mild fatigue, 27 (90%) had extreme fatigue, 0 (0%) had worst fatigue.

The mean score on level of fatigue among patients receiving chemotherapy in study group was 6.13 in pre test and 4.86 in post test. The estimated paired‘t’ value was 3.73* which is significant at $p<0.05$. It shows that warm water foot bath was effective in reducing the level of fatigue in patients receiving chemotherapy. Hence the research hypothesis (H_1) is accepted.

In control group the mean score on level of fatigue among patients receiving chemotherapy was 6 in pre test and 5.83 in post test. The estimated paired‘t’ value was 0.93 which is non significant at $p<0.05$.

The result was supported by the following study, **Chen, X.P et al(2011)** who conducted an experimental study to assess the effectiveness of a warm-water footbath on relieving fatigue and insomnia problems in patients undergoing chemotherapy in canada. 25 and 18 samples were chosen by purposive sampling technique in the comparison and experimental groups. longitudinal study design was used. Adults diagnosed with gynecologic cancer and receiving a 4-series platinum chemotherapy regimen were recruited and then followed up for 6 months. They completed fatigue and insomnia items on the 1st, 2nd, 4th, 7th, and 14th days after each scheduled chemotherapy. Participants in the experimental group soaked their feet in 41°C to 42°C warm water for 20 minutes every evening, starting from the eve of receiving the first chemotherapy, whereas participants in the comparison group did not do so. Participants in the experimental group reported a significant reduction in fatigue and improvement in sleep quality from the second session of chemotherapy and continued to improve during the study period. The findings shows that in reduced fatigue and insomnia symptoms for gynecologic cancer patients during chemotherapy.

Based on the Pender’s health promotion model the second step was demonstrating the warm water foot bath. Here the investigator gave intervention to study group. Then compared the pre test and post test level of fatigue among patients receiving chemotherapy in study group and control group. Based on the calculation the result showed that study group experienced less fatigue than control group.

In study group, during pre test 0 (0%) had no insomnia, 0 (0%) had mild insomnia,11 (36.67%) had moderate insomnia and 19 (63.33%) had severe insomnia. In control group 0 (0%) had no insomnia , 0(0%) had mild insomnia , 12 (40%) had moderate insomnia and 18 (60%) had severe insomnia .

During post test, in study group 0 (0%) had no insomnia, 0 (0%) had mild insomnia, 16 (46.67%) had moderate insomnia and 14(53.3%) had severe

insomnia. In control group 0 (0%) had no insomnia, 0 (0%) had mild insomnia, 24(80%) had moderate insomnia and 6 (20%) had severe insomnia.

The mean score on level of insomnia among patients receiving chemotherapy in study group was 18.7 in pre test and 18.9 in post test. The estimated paired't' value was 2.02* which is significant at $p<0.05$. It shows that warm water foot bath was effective in reducing the level of insomnia in patients receiving chemotherapy. Hence the research hypothesis (H_1) is accepted.

In control group the mean score on level of insomnia among patients receiving chemotherapy was 19.3 in pre test and 19.7 in post test. The estimated paired't' value was 0.89 which is non significant at $p<0.05$.

The result was supported by the following study, **Han SH et al (2006)** who conducted a randomized placebo- controlled clinical trial in Korea with the objective of exploring the effect of warm water foot bath on level of fatigue and insomnia among patients receiving chemotherapy. The subjects were 67 females. Subjects were randomized into three group, a study group (n=25) who received warm water foot bath, a placebo group (n=20), a control group (n=22). Warm water foot bath was applied topically to the study group. The placebo group water bath only, and no treatment for control group. The level of fatigue and insomnia were assessed by using a visual analogue scale and Pittsburgh insomnia scale. Results showed that the fatigue and insomnia was significantly lowered in the study group than in the other two groups at both post test time (first day Beta=-2.48, 95%, cl -3.68 to -1.29 P<0.001, second day Beta = -1.97, 95% Cl-3.66 to -0.29, P=0.02 and the severity of fatigue and insomnia (first day Beta= 0.31, 95% Cl = 0.05 to 0.57, P=0.02 second day Beta 0.03, 95% Cl:0.10 to 0.56 P=0.006) than that found in the other groups. The findings suggest that using essential warm water foot bath is effective in decreasing the severity of fatigue and insomnia.

Based on the Pender's health promotion model the second step was demonstrating the warm water foot bath. Here the investigator gave intervention to study group. Then compared the pre test and post test level of insomnia among patients receiving chemotherapy in study group and control group. Based on the

calculation the result showed that study group experienced less insomnia than control group.

The second objective is to evaluate the effectiveness of warm water foot bath on level of fatigue and insomnia among patients receiving chemotherapy in study group

While comparing the post test level of fatigue in study group and control group the mean score on level of fatigue among patients receiving chemotherapy in study group was 4.86 and in control group was 5.7. The estimated unpaired't' value was 3.36* which is significant at $p<0.05$. It shows that warm water foot bath was effective in reducing the level of fatigue in patients receiving chemotherapy.

Based on the theory third step was explaining the need for warm water footbath was met. Here the study group reduction in the level of fatigue and the control group no reduction in the level of fatigue.

While comparing the post test level of insomnia in study group and control group the mean score on level of insomnia among patients receiving chemotherapy in study group was 18 and in control group was 19.7. The estimated unpaired't' value was 3.54* which is significant at $p<0.05$. It shows that warm water foot bath was effective in reducing the level of insomnia in patients receiving chemotherapy.

The result was supported by the following study. **Denise Tiran** conducted a randomized controlled trial in Taiwan. To determine the effectiveness of using warm water foot bath in patients receiving chemotherapy. 130 female adolescents were randomly assigned to an experimental (n=70) and a control (n=60) group. Pre intervention and post intervention data were gathered . The results showed that compared with control group, the study group perceived less fatigue and insomnia after the intervention.

Based on the theory third step was explaining the need for warm water footbath was met. Here the study group reduction in the level of insomnia and the control group no reduction in the level of insomnia.

The third objective is to determine the association between the post test level of fatigue and insomnia among patients receiving chemotherapy with their selected demographic and clinical variables in study and control group

There is no significant association ($p<0.05$) between the post test level of fatigue and insomnia among patients receiving chemotherapy in study group and control group with their selected demographic and clinical variables such as age, gender, place of residence, religion, type of family, marital status ,educational status, type of diet, duration of illness, cycle of chemotherapy, co morbidity, occupation and family income at $p<.05$ level. Hence hypothesis is (H_2) is not accepted.

This chapter deal with the discussion of the study with reference to the objective and supportive studies. All the third objectives have been obtained and the two hypotheses were accepted in this study.

CHAPTER – VI

SUMMARY, CONCLUSION, LIMITATIONS, NURSING IMPLICATION AND RECOMMENDATIONS

This chapter deal with the summary of the study, conclusion drawn, nursing implications, limitations and recommendations of the study.

SUMMARY

Quantitative evaluative approach with quasi experimental pre test and post test control group research design was used to determine the effectiveness of warm water foot bath on level of fatigue and insomnia among patients receiving chemotherapy. The conceptual framework for the study was based on Pender's health promotion model. The tool used in this study consisted of three parts. Part one was demographic variables, part two was the clinical variables, part three was the Athens insomnia scale, part four was the fatigue self assessment scale. It was used to assess the level of insomnia and part three was the fatigue self assessment scale which was used to assess the level of fatigue. Purposive sampling technique was used to select the samples and data was collected from the participants in study group and control group. The data was collected and analysed using descriptive and inferential statistics. The level of significant was assessed by $p<0.05$ to test the hypothesis.

FINDINGS

The major findings of the study was summarised as follows, the demographic profile in study group 13 (43.3%) of them belong to the age group between 41-60 years, 10 (33.33%) of them belong to the age group between 61-80 years. Regarding gender 18 (60%) were females, 12 (40%) were males. Regarding place of residence 13 (43.33%) of them belongs to semi-rural areas, 11 (36.67%) of them belongs to rural areas. Regarding the religion 16 (53.33%) belongs to Christian religion, 14 (46.67%) belongs to Hindu. Regarding the type of family 6 (20%) belonged to joint family, 24 (80%) belonged to nuclear family. Regarding their marital status 23(76.66%) were married and 3(10%) were unmarried**.** Regarding educational status 13(43.33%) were illiterate 9(30%) was

completed primary education. As per dietary pattern 18 (60%) were vegetarian and 12 (40%) were non vegetarian. With regard to the duration of illness 16 (53.33%) were had 0-12 months of duration, 11 (36.67%) had 13-24 months of duration. As per cycle of chemotherapy 19 (63.33%) had first cycle of chemotherapy, 7 (23.33%) had second cycle of chemotherapy. With regard to the occupation 12 (40%) were self workers, 11 (36.67%) were un employees. As per family income 14 (43.33%) had less than Rs 5,000 per month, 11 (36.67%) had Rs 5,001-10,000 per month.

In control group 13 (43.3%) of them belong to the age group between 41-60 years, 10 (33.33%) of them belong to the age group between 61-80 years. Regarding gender 18 (60%) were females, 12 (40%) were males. Regarding place of residence 13 (43.33%) of them belongs to semi-rural areas, 11 (36.67%) of them belongs to rural areas. Regarding the religion 16 (53.33%) belongs to Christian religion, 14 (46.67%) belongs to Hindu. Regarding the type of family 6 (20%) belonged to joint family, 24 (80%) belonged to nuclear family. Regarding their marital status 23(76.66%) were married and 3(10%) were unmarried**.** Regarding educational status 13(43.33%) were illiterate 9(30%) was completed primary education. As per dietary pattern 18 (60%) were vegetarian and 12 (40%) were non vegetarian. With regard to the duration of illness 16 (53.33%) were had 0-12 months of duration, 11 (36.67%) had 13-24 months of duration. As per cycle of chemotherapy 19 (63.33%) had first cycle of chemotherapy, 7 (23.33%) had second cycle of chemotherapy. With regard to the occupation 12 (40%) were self workers, 11 (36.67%) were un employees. As per family income 14 (43.33%) had less than Rs 5,000 per month, 11 (36.67%) had Rs 5,001-10,000 per month.

In study group, during pre test 0 (0%) had no fatigue, 0 (0%) had mild fatigue, 4(13.3%) had moderate fatigue and 26 (87%) had severe fatigue. In control group 0 (0%) had no fatigue, 0 (0%) had mild fatigue, 3 (10%) had moderate fatigue and 27 (90%) had severe fatigue, none of them had worst level of fatigue.

During pre test, in study group 0 (0%) had no insomnia, 0 (0%) had mild insomnia, 11 (36.67%) had moderate insomnia and 19(63.33%) had severe insomnia. In control group 0 (0%) had no and mild insomnia, 12(40%) had moderate insomnia, and 18 (60%) had severe insomnia.

During post test, in study group 0 (0%) had no fatigue, 0 (0%) had mild fatigue, 26 (87%) had moderate fatigue and 4 (13.3%) had severe fatigue. In control group 0 (0%) had no and mild fatigue, 27 (90%) had moderate fatigue, 3(10%) had severe fatigue none of them had worst level of fatigue.

During post test, in study group 0 (0%) had no insomnia, 0 (0%) had mild insomnia, 16 (46.67%) had moderate insomnia and 14 (53.3%) had severe insomnia. In control group 0 (0%) had no and mild insomnia, 24 (80%) had moderate insomnia, 6(20%) had severe insomnia

The mean score on level of fatigue among patients receiving chemotherapy in study group was 6.13 in pre test and4.86 in post test. The estimated paired‘t’ value was 3.73* which is significant at $p<0.05$. It shows that warm water foot bath is effective in reducing the level of fatigue in patients receiving chemotherapy. Hence the research hypothesis (H_1) is accepted.

In control group the mean score on level of fatigue among patients receiving chemotherapy was 6 in pre test and 5.83 in post test. The estimated paired‘t’ value was 0.93 which is significant at $p<0.05$.

The mean score on level of insomnia among patients receiving chemotherapy in study group was 18.7 in pre test and 18.9 in post test. The estimated paired‘t’ value was 2.02* which is significant at $p<0.05$. It shows that warm water foot bath is effective in reducing the level of insomnia in patients receiving chemotherapy. Hence the research hypothesis (H_1) is accepted.

In control group the mean score on level of insomnia among patients receiving chemotherapy was 19.3 in pre test and 19.7 in post test. The estimated paired‘t’ value was 0.89 which is non significant at $p<0.05$.

Comparing the post test level of fatigue in study group and control group the mean score on level of fatigue among patients receiving chemotherapy in study group was 4.86 and in control group was 5.7. The estimated unpaired't' value was 3.36* which is significant at $p<0.05$. It shows that warm water foot bath was effective in reducing the level of fatigue in patients receiving chemotherapy.

Comparing the post test level of insomnia in study group and control group the mean score on level of insomnia among patients receiving chemotherapy in study group was 18 and in control group was19.7. The estimated unpaired't' value was 3.54* which is significant at $p<0.05$. It shows that warm water foot bath was effective in reducing the level of insomnia in patients receiving chemotherapy. Hence the research hypothesis (H_2) is accepted.

There is no significant association ($p<0.05$) between the post test level of fatigue and insomnia among patients receiving chemotherapy in study and control group with their selected demographic variables such as age, sex, place of residence, educational status, economic status, religion, type of family, marital status, dietary pattern, duration of illness, cycle of chemotherapy ,co morbidity and occupation at $p<0.05$ level. Hence hypothesis is (H_2) is not accepted.

CONCLUSION

From the result of the study, it was concluded that most of the patients receiving chemotherapy have fatigue and insomnia. The remedies needed for fatigue and insomnia. Warm water foot bath to the patients receiving chemotherapy was effective in reducing fatigue and insomnia. Therefore the investigator felt that more importance should be given for warm water foot bath to reduce level of fatigue and insomnia in patients receiving chemotherapy.

IMPLICATIONS

The researcher has derived the following implications from the study results which are of vital concern to the field of nursing service, nursing administration, nursing education and research.

Implication for nursing practice

Nurses should develop in depth knowledge about the side effects of chemotherapy. Nurses should be knowledgeable regarding the benefits of complementary therapy including warm water foot bath in reducing level of fatigue and insomnia in patients receiving chemotherapy, which should be practiced in the hospital or community. Nurses should educate and encourage patients receiving chemotherapy to use warm water foot bat during chemotherapy. Nurses should incorporate health and complementary treatment plans during their service whenever it is possible.

Implication for nursing education

Nurse educators need to be equipped with in depth knowledge and skill regarding warm water foot bath. Nursing students should receive adequate training regarding the application of warm water foot bath, physiology and the specific health benefits of regular practicing of the warm water foot bath technique. They should conduct workshops or conferences for students regarding the benefit of warm water foot bath in a day today nursing practice and strengthen the curriculum for nurses to excel them in knowledge and skill in areas of various modalities.

Implication for nursing administration

Nurses should assist in implementing public health awareness campaigns aimed at reducing fatigue and insomnia. Nurses should provide knowledge, resources and leadership for establishing public health policies that focus on warm water foot bath therapy for reducing level of fatigue and insomnia among patients receiving chemotherapy. Public information programs should be designed by nurses to encourage warm water foot bath therapy for patients receiving chemotherapy.

Implication for nursing research

Nursing research is to be done to find out the various innovative method to reduce fatigue and insomnia. The finding of the study would help to expand the

scientific body of professional knowledge upon which their research can be conducted. Large scale study should be conducted on warm water foot bath on level of fatigue and insomnia and disseminate the finding of research through conferences, seminars and publishing in nursing journals.

LIMITATIONS

Since there were very few studies done on the effectiveness of warm water foot bath in reducing level of fatigue and insomnia among patients receiving chemotherapy, the investigator had a lot of difficulty in collecting the study materials for the review.

RECOMMENDATIONS

The following studies can be undertaken to strengthen warm water foot bath as a good remedy for reducing the level of fatigue and insomnia among patients receiving chemotherapy.

- A similar study can be conducted with increased in the sample size.
- A similar study can be conducted among patients receiving radiotherapy.
- A similar study can be conducted in long time period with various parameters.

REFERENCE

REFERENCE

TEXT BOOKS

1.Basavanthappa BT (2007) .Nursing Research . New Delhi: Jaypee Publications.

2.Black M.J.Jane Hokanson Hawks (2005).Medical Surgical Nursing. Seventh edition.Pennsyivania: W.B.Saunders Company .

3.Black J M ,Hawks JH, Keen AM (2006). Medical Surgical Nursing. Sixth edition.Philadelphia:Elsevier Mosby.

4.Brunner and Suddarth (2009). Medical Surgical Nursing.11th edition.Lippincott Williams and Wilkins Publications.

5.Govindhan Ramaswamy (2007).The Washington manual of Oncology. Second edition. New Delhi.Lippincott Williams and Wilkins Publications.

6.Heikemper Levis et al (2007). Medical Surgical Nursing. 7th edition. Philadelphia .Elsevier publications.

7.James .A.Pain (2003). Reading, understanding and applying nursing research. Second edition .F.A.Davis Company.

8.Joan Welkonitz (2000). An introductory statistics ofr behavioral sciences 4th edition Tokyo: Harcourt Brace College Publication.

9.Kothari .C.R. (2001). Research methodology ,methods techniques. 2nd edition. New Delhi:Vishwa Prakash Publications.

10.Maharajan B.(1998).Methods in biostatistics for medical students and research workers .2nd edn.Jaypee Brothers Publications.

11.Munro BH.(2005).Statistical methods for health care Research.New Delhi: Lippincott Williams and Wilkins.

12.Parker M.E.(2001).Nursing theories and nursing practice.4thedition. Philadelphia.F.A.Davis Company.

13.Potter P A, Perry AG (2006). Fundamentals of nursing.6th edition. St.Louis : Elseviers Mosby publications.

14.Polit .F.D, Hungler.P.B (2004) .Nursing research : Principles and methods. 7th edition.Philadelphia.Lippincott Williams and Wilkins.

15.Usha Ravindran Nair (2007).Textbook of Medical Surgical Nursing.2nd edition. New Delhi.Jaypee Publications.

JOURNAL REFERENCE

16.Selvakumari R (2011). Hot water foot bath therapy for patients with fever ; Nightingale nursing times

17.Jissa k joy (2011).Effectiveness of cryotherapy on pain after the intravenous administration of chemotherapeutic agents among patients with cancer

18.Devasirvadam S.V(2013).Effect of guided imagery in terms of pain and stress among terminally ill cancer patients : Nightingale nursing times

19.Lavanya S (2013) .cancer related fatigue: Nightingale nursing times

20.Jasmine J and Jayaseelan (2010).Effectiveness of foot massage on pain among patients with cancer: The nurse

21.Kavita M (2014).Side effects of chemotherapy among patients receiving chemotherapy: Nightingale nursing times

NET REFERENCES

22.http:// www.wikipedia.com

23. http:// www.emedicine health.com

24. http:// www.elsevierhealth.com

25. http:// www.pubmed.com

26. http:// www.cancer.gov/treatment modalities/chemotherapy

27. http:// www.ncbi.nlm.nih.gov/pubmed

28. http:// www.hccpjournal.com/content

29. http:// www.encyclopedia .com/doc/.html.

30. http:// www.medscape.com/viewarticle/

ANNEXURE

ANNEXURE –I

St. XAVIER'S CATHOLIC COLLEGE OF NURSING

Chunkankadai, Nagercoil,
Kanyakumari District,
Tamil Nadu - 629 003.

Tel : College : 04651 - 231740
Cell : 9840307884
Fax : 04651 - 230914
E-mail : xaviers_nursing@yahoo.com
reenaevancy@yahoo.com
Website : www.xaviersnsg.edu.in

Dr. A. REENA EVENCY, M.Sc. (N)., Ph.D.,
Principal

02.05.2014

To

The Medical Superintendent,

C.S.I.Mission hospital,

Neyyoor.

Respected Sir,

Miss. M. Bindhusha, is a student of M. Sc., Nursing programme from the Clinical Speciality, Medical surgical Nursing in our college. She is conducting a study on, **"An experimental study to evaluate the effectiveness of warm water foot bath on level of fatigue and insomnia among patients receiving chemotherapy in selected hospitals ,kanyakumari district"**

This is for the research project to be submitted to the Tamilnadu Dr. M.G.R Medical University in Partial fulfillment of university requirement for the award of M.Sc., Nursing Degree.

As a part of her study she needs to assess the level of fatigue and insomnia of patients receiving chemotherapy. So permission may kindly be granted for her to conduct the study at C.S.I.Mission hospital, Neyyoor. She will abide by the rules and regulations of the Hospital.

Thanking you,

Yours faithfully,

2/5/14

PRINCIPAL
St. XAVIER'S CATHOLIC COLLEGE OF NURSING
CHUNKANKADAI
NAGERCOIL - 629 003
K. K. DIST.

St. XAVIER'S CATHOLIC COLLEGE OF NURSING

Chunkankadai, Nagercoil,
Kanyakumari District,
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Fax : 04651 - 230914
E-mail : xaviers_nursing@yahoo.com
reenaevancy@yahoo.com
Website : www.xaviersnsg.edu.in

Dr. A. REENA EVENCY, M.Sc. (N)., Ph.D.,
Principal

28.06.2014

To

The Nursing superintendent,

Holycross Hospital,

Nagercoil.

Respected Sir,

Ms. M. Bindhusha, is a student of M.sc., nursing programme from the clinical speciality, medical surgical nursing in our college. she is conducting a study on, " Anexperimental study to evaluate the effectiveness of warm water foot bath on level of fatigue and insomnia among patients receiving chemotherapy in selected hospitals at kanyakumari district"

This is for the research project to be submitted to the Tamilnadu Dr. M.G.R Medical University in Partial fulfillment of university requirement for the award of M.Sc., Nursing Degree.

As a part of her study she needs to evaluate the level of fatigue and insomnia. So permission may kindly be granted for her to conduct the study atHolycross hospitalNagercoil. She will abide by the rules and regulations of the hospital.

Thanking you,

Yours faithfully,

PRINCIPAL
ST. XAVIER'S CATHOLIC COLLEGE OF NURSING
CHUNKANKADAI
NAGERCOIL - 629 003
K. K. DIST.

ANNEXURE-II

Phone : 04651-222334

KANYAKUMARI MEDICAL MISSION C.S.I.

INTERNATIONAL CANCER CENTRE, NEYYOOR

Dr. S. RAJESH SATHYA, M.B.B.S.,M.D.,D.A.A.,D.N.B.(Cardiology)
Director-in-charge

POST BAG No. 4
NEYYOOR - 629 802
KANYAKUMARI DISTRICT
TAMIL NADU, S. INDIA

Ref. No.

Date : 26.08.2014

To

The Principal,
St. Xavier's Catholic College of Nursing,
Chunkankadai,
Nagercoil.

This is to certify that Ms. Bindhusha is a M.Sc Nursing student of St. Xavier's Catholic College of Nursing, Nagercoil has conducted a study to evaluate the effectiveness of warm water foot bath on level of fatigue and insomnia among patients receiving chemotherapy in International Cancer Centre, Neyyoor for one month from 01.08.2014 to 31.08.2014 and successfully completed the data collection.

DIVISION OF RADIATION ONCOLOGY
NEYYOOR - 629 802
KANYAKUMARI - T.N
INTERNATIONAL CAN

Dr.V.C.Sudhakaran, M.D.,DMRT
Head, Radiation Oncology
International Cancer center
Neyyoor - 629 802(T.N)

ANNEXURE- III

LETTER SEEKING EXPERTS OPINION FOR THE VALIDITY OF THE TOOL

From

Ms.M.Bindhusha,
M.Sc. Nursing II year,
St. Xavier's Catholic college Of Nursing,
Chunkankadai.

To

Respected Sir/ Madam,

Sub: Requisition to expert opinion and suggestion for the content validity.

I Mrs.M.Bindhusha, M.Sc. Nursing II year student of St.Xavier's Catholic College Of Nursing, Chunkankadai, have selected the following topic, **"An experimental study to evaluate the effectiveness of warm water foot bath on level of fatigue and insomnia among patients receiving chemotherapy in selected hospitals ,kanyakumari district"** for my dissertation to be submitted to Tamilnadu Dr. M.G.R. Medical University in the partial fulfilment of the requirement for award of Master of science in Nursing.

I request you to go through the items and give your valuable suggestions and opinions to develop the content validity of the tool. Kindly suggest modifications, addition and deletions if any in the remarks column.

Thanking You,

Place: Chunkankadai.
Date: Yours sincerely,

M.Bindhusha

ENLOSURE:

1. Problem statement, objectives, and hypothesis of the study.
2. Demographic profile.
3. Athens insomnia scale.
4. Fatigue Self assessment scale
5. Evaluation Performa.

ANNEXURE - IV

EVALUATION CRITERIA CHECKLIST FOR VALIDATION

Instructions:

The expert is requested to go through the following criteria for evaluation. Three columns are given for responses and a column for remarks. Kindly please tick mark (✓) in the appropriate columns and give remarks. Interpretation column:

Column I – meets the criteria.

Column II - Partially meets the criteria.

Column III – does not meet the criteria.

S.No	CRITERIA				REMARKS
1	Scoring -adequacy. -clarity. -simplicity.				
2	Content -logical sequence. -adequacy. -relevance.				
3	Language -Appropriate. -clarity. -simplicity.				
4	Practicability -easy to score. -precise. -utility.				

Signature: Any other suggestion:

Name:

Designation:

Address:

CRITERIA CHECK LIST FOR VALIDATION OF THE TOOL

Instructon:

Kindly give your suggestions regarding the accuracy, relevance and appropriateness of the content. Kindly (✓) against specific columns.

PART-I

Validation of Demographic variables.

Item	Very relevant	Relevant	Need for modification	Not relevant	Remarks
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					

PART-II

Validation of Athens insomnia scale scoring.

Item	Very relevant	Relevant	Need for modification	Not relevant	Remarks
1					
2					
3					
4					
5					
6					
7					
8					

PART-III

Validation of fatigue Self assessment scale scoring.

Item	Very relevant	Relevant	Need for modification	Not relevant	Remarks
1					
2					
3					
4					
5					

ANNEXURE - V

LIST OF EXPERTS WHO VALIDATED THE TOOL

1. Dr.V.G.Sudakaran, MD.DMRT,
   Head of the Department of Radiation Oncology
   International Cancer Centre,
   Neyyoor, Kanyakumari District,
   Pin code-629802

2. Dr. A. Manohar Williams, M.B.B.S.,M.D.
   Consultant Physician,
   Holy Cross Hospital, Vettoornimadam, Nagercoil ,
   Kanyakumari District.

3. Dr. Judie, M.Sc (N)., Ph D (N).
   Dean, Sri Ramaswamy Memorial University,
   Chennai.

4. Mrs.Sheeba, M.Sc.(N),
   Reader,
   Christian College of Nursin, Neyyoor,
   Kanyakumari District.

5. Dr.Sharmila, M.Sc(N),
   Reader,
   Christian College of Nursing, Neyyoor,
   Kanyakumari District.

ANNEXURE -VI

INFORMED CONSENT

I ——————————Since I have mild / moderate/severe fatigue and insomnia during chemotherapy. I am willing to participate in the study to evaluate the effectiveness of warm water foot bath, without any compulsion. I came to know through the researcher that the warm water foot bath are harmless and easy to follow.

Yours Sincerely,

ANNEXURE- VII

CALIBRATION CERTIFICATE

Date: 29/07/2014

TO WHOM SO EVER IT MAY CONCERN

This is to certify that Mrs.M.Bindhusha is a M.Sc Nursing student of St.Xavier's Catholic College of Nursing ,Chunkankadai will be conduct a study on "A quasi experimental study to evaluate the effectiveness of warm water footbath on level of fatigue and insomnia among patients receiving chemotherapy in Selected Hospitals at Kanyakumari District", in which she is using lotion thermometer ,the deviation within the range and the instrument is working in good condition.

Date of calibration: 29/07/2014

Next due for calibration: 01/06/2015

29/07/2014

Bio-medical Engineer

ANNEXURE - VIII

CERTIFICATE OF EDITING

TO WHOM SO EVER IT MAY CONCERN

Certified that the dissertation paper titled **"A Quasi experimental study to evaluate the effectiveness of warm water foot bath on level of fatigue and insomnia receiving chemotherapy in selected hospitals, Kanyakumari district"** by **Mrs. M. Bindhusha,** has been checked for the accuracy and correctness of English language usage and that the language used in the tool is lucid, unambiguous free of grammatical or spelling errors and appropriate for the purpose.

Signature G. MARY NIRMALA

MORNING STAR POLYTECHNIC COLLEGE
CHUNKANKADAI - 629 807
KANYAKUMARI DIST

CERTIFICATE OF EDITING

TO WHOM SO EVER IT MAY CONCERN

Certified that the tool **Athens insomnia scale, fatigue self assessment scale and demographic and clinical variables** for the research purpose of **Mrs. M. Bindhusha,** has been checked for the accuracy and correctness of Tamil language usage and that the language used in the tool is lucid, unambiguous free of grammatical or spelling errors and appropriate for the purpose.

Dr. V. SELVARAJ

Signature

RISING STAR POLYTECHNIC COLLEGE
CHUNKANKADAI - 629 807
KANYAKUMARI DIST.

ANNEXURE- IX

CERTIFICATE STATISTICAL ANALYSIS AND INTERPRETATION

TO WHOM SO EVER IT MAY CONCERN

Certified that the dissertation paper titled **"An experimental study to evaluate the effectiveness of warm water foot bath on level of fatigue and insomnia among patients receiving chemotherapy in selected hospitals, Kanyakumari District by Mrs. M. Bindhusha ,** has been checked for the accuracy in statistical analysis and interpretation and was appropriate for the purpose.

17/1/15

Signature

Dr. G. IMMANUEL
Assistant Professor
Centre for Marine Science & Technology
Manonmaniam Sundaranar University
Rajakkamangalam - 629 502
K. K. District, Tamilnadu, India

ANNEXURE -X

TOOL FOR DATA COLLECTION

The tool will be used in the study consists of three parts.

PART:I

Demographic data consists of age, gender, place of residence, religion, type of family, marital status, education, type of diet, duration of illness, cycle of chemotherapy, co morbidity occupation and family income.

DEMOGRAPHIC AND CLINICAL VARIABLES:

1) Age

a) 21-40 yrs ( )

b) 41-60 yrs ( )

c) 61-80 yrs ( )

d) Above 80 yrs ( )

2) Gender

a)Male ( )

b)Female ( )

3) Place of residence

a) Rural ( )

b) Semi rural ( )

c) Urban ( )

d) Semi urban ( )

4) Religion

a) Hindu ( )

b) Christian ( )

c) Muslim ( )

d)Others ( )

5) Type of family

a) Joint ( )

b) Nuclear ( )

c) Broken ( )

d) Others ( )

6) Marital status

a) Married ( )

b) Unmarried ( )

c) Widow or Widower ( )

d) Separated ( )

7)Education

a) Illiterate ( )

b) Primary ( )

c) Higher secondary ( )

d) Graduate and others ( )

8)Type of diet

a)vegetarian ( )

b)Non vegetarian ( )

9) Duration of illness

a) 0-12 months. ( )

b) 13-24 months. ( )

c) 25-36 months. ( )

d) More than 37 months ( )

10)Cycle of chemotherapy

a)1 ( )

b)2 ( )

c)3 ( )

d)Up to 7 ( )

11)Co morbidity

a)Diabetes mellitus ( )

b) Hypertension ( )

c)Stroke ( )

d)Others ( )

12)Occupation

a) Govt.worker ( )

b)Private worker ( )

c)Self worker ( )

d)Unemployment ( )

13)Family income

a)Below Rs.5,000 ( )

b)Rs.5,001-10,000 ( )

c)Rs.10,001-20,000 ( )

d)Above Rs.20,000 ( )

PART: II

ATHENS INSOMNIA SCALE

Instructions:

This scale is intended to record your own assessment of any sleep difficulty you might have experienced. Please, check (by circling the appropriate number) the items below to indicate your estimate of any difficulty.

S.No	Questions	Scoring
I	**Sleep induction**	
	a)No problem	0
	b)Slightly delayed	1
	c)Markedly delayed	2
	d)Very delayed or did not sleep at all	3
II	**Awakenings during the night**	
	a)No problem	0
	b)Minor problem	1
	c)considerable problem	2
	d)serious problem or did not sleep at all	3
III	**Final awakening earlier than desired**	
	a)not earlier	0
	b)a little earlier	1
	c)markedly earlier	2
	d)much earlier or did not sleep at all	3
IV	**Total sleep duration**	
	a)sufficient	0
	b)slightly insufficient	1
	c)markedly insufficient	2
	d)very insufficient or did not sleep at all	3
V	**Over all quality of sleep**	
	a) Satisfactory	0
	b) slightly unsatisfactory	1
	c) markedly unsatisfactory	2
	d) very unsatisfactory or did not sleep at all	3
VI	**Sense of wellbeing during the day**	
	a) normal	0
	b) slightly decreased	1
	c) markedly decreased	2
	d) very decreased	3

VII	**Functioning** a) normal b) slightly decreased c) markedly decreased **d)** very decreased	 0 1 2 3
VIII	**Sleepiness during the day** a) none b) mild c) considerable d) intense	 0 1 2 3

Interpretations:

0 : normal

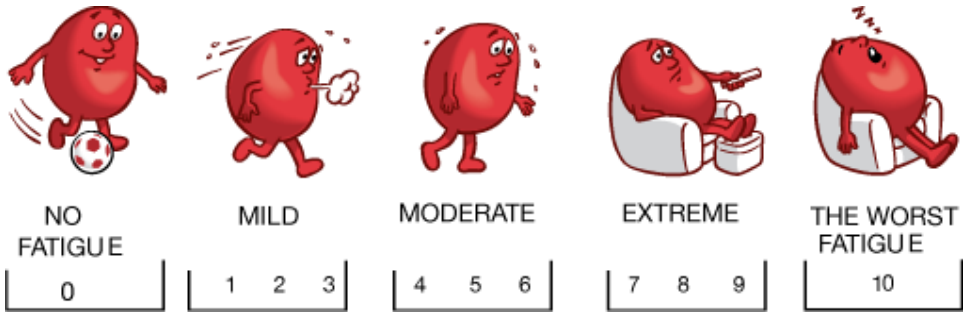
1-8 : mild level of insomnia

9-16 : moderate level of insomnia

17-24 : severe level of insomnia

PART: III

FATIGUE SELF ASSESSMENT SCALE



Interpretations:

0 : No fatigue

1-3 : Mild level of fatigue

4-6 **:** Moderate level of fatigue

7-9 **:** Extreme level of fatigue

10 **:** The worst fatigue

பகுதி -1

கீழ்க்காணும் வினாக்களுக்கு சரியான விடையை (✓) பொருத்தமான அடைப்புக்குறிக்குள் இடவும்.

1. வயது

அ) 21-40 வயது ( )

ஆ) 41-60 வயது ( )

இ) 61-80 வயது ( )

ஈ) 80 வயதுக்குமேல் ( )

2. பாலினம்

அ) ஆண் ( )

ஆ) பெண் ( )

3. வசிக்குமிடம்

அ) கிராமம் ( )

ஆ) பகுதி கிராமம் ( )

இ) நகரம் ( )

ஈ) பகுதி நகரம் ( )

4. மதம்

அ) இந்து ( )

ஆ) கிறிஸ்தவம் ( )

5. குடும்ப வகை

அ) கூட்டுக்குடும்பம் ( )

ஆ) தனிக்குடும்பம் ( )

6. திருமணம்

அ) ஆனவர் ( )

ஆ) ஆகாதவர் ( )

7. கல்வித் தகுதி

அ) படிக்காதவர் ( )

ஆ) ஆரம்பக்கல்வி ( )

இ) மேல்நிலைக் கல்வி ( )

ஈ) பட்டத்தாரி ( )

8. உணவு முறை

அ) சைவம் ( )

ஆ) அசைவம் ( )

9. நோயின் காலம்

அ) 0-12 மாதம் ( )

ஆ) 13-24 மாதம் ( )

இ) 25-36 மாதம் ( )

10. பிறநோய்கள்

அ) சர்க்கரை நோய் ( )

ஆ) இரத்தக்கொதிப்பு ( )

இ) பக்கவாதம் ( )

11. புற்றுநோய் மருத்துச்சுற்று

அ) 1 ( )

ஆ) 2 ( )

இ) 3 ( )

12. வேலை

அ) அரசு வேலை ( )

ஆ) தனியார் வேலை ( )

இ) கூலி வேலை ( )

ஈ) வேலை இல்லை ( )

13. குடும்ப மாத வருமானம்

அ) ரூ. 5,000 க்கும் குறைவாக ( )

ஆ) ரூ. 5,001 முதல் 10,000 வரை ( )

இ) ரூ. 10,001 முதல் 20,000 வரை ( )

ஈ) ரூ. 20,000 க்கு மேல் ( )

பகுதி – 2

எத்தன்ஸ் தூக்கமின்மை அளவுகோல்

(இந்த அளவுகோல் உங்களது தூக்கமின்மையை அளவீடு செய்வதற்காக தரப்பட்டுள்ளது. கீழ்க்காணும் வினாக்களுக்கு ஏற்ற உங்களது விடையை வட்டமிடவும்)

1. தூக்கம் துவங்குவது
   - அ) எந்த பிரச்சினையும் இல்லை 0
   - ஆ) சிறிது தாமதமாக 1
   - இ) கொஞ்சம் கூட தாமதமாக 2
   - ஈ) மிகத் தாமதமாக அல்லது தூக்கமே இல்லை 3

2. தூக்கத்தின் நடுவில் விழிப்பது
   - அ) எந்த பிரச்சினையும் இல்லை 0
   - ஆ) சிறிது நேரம் 1
   - இ) கொஞ்சம் 2
   - ஈ) மிக அதிகமாக அல்லது தூக்கமே இல்லை 3

3. தூக்கம் முடித்து எழும்புவது
   - அ) சீக்கிரமாக இல்லை 0
   - ஆ) கொஞ்சம் சீக்கிரமாக 1
   - இ) கொஞ்சம் கூட சீக்கிரமாக 2
   - ஈ) மிகச் சீக்கிரமாக அல்லது தூக்கமே இல்லை 3

4. மொத்த தூக்க நேரம்
   - அ) போதுமானது 0
   - ஆ) சிறிது போதுமானது அல்ல 1
   - இ) கொஞ்சம் கூட போதுமானது அல்ல 2
   - ஈ) மிக மிக போதுமானது அல்ல அல்லது தூக்கமே இல்லை 3

5. மொத்ததில் தூக்கத்தின் தரம்
   - அ) திருப்தியானது 0
   - ஆ) சிறிது 1
   - இ) கொஞ்சம் கூட 2
   - ஈ) திருப்தியானதாகவே இல்லை அல்லது தூக்கமே இல்லை 3

6. அந்த ஒரு நாள் முழுவதும் மன ஆரோக்கியம்

அ) நன்றாக	0
ஆ) சிறிது குறைவாக	1
இ) கொஞ்சம் கூட குறைவாக	2
ஈ) மிகக் குறைவாக	3

7. அந்த ஒரு நாள் முழுவதும் செயல்பாடு

அ)நன்றாக	0
ஆ) சிறிது குறைவாக	1
இ) கொஞ்சம் கூட குறைவாக	2
ஈ) மிகக் குறைவாக	3

8. பகல் பொழுது தூக்கம்

அ) இல்லை	0
ஆ) கொஞ்சம்	1
இ) கொஞ்சம் அதிகமாக	2
ஈ) கடுமையான தூக்கம்	3

குறிப்பு

0.8 கொஞ்சம் தூக்கமின்மை

9.16 அதிகமான தூக்கமின்மை

17.24 மிக அதிகமான தூக்கமின்மை

பகுதி – 3

தளர்வுக்கான தன்னளவுகோல்

தளர்வு இல்லை 0	மிதமான தளர்வு 1-3	கொஞ்சம் அதிகமான தளர்வு 4-6	மிக அதிகமான தளர்வு 7-9	மிகமிக அதிகமான தளர்வு 10

குறிப்பு

0	-	தளர்வு இல்லை
1-3	-	மிதமான தளர்வு
4-6	-	கொஞ்சம் அதிகமான தளர்வு
7-9	-	மிக அதிகமான தளர்வு
10	-	மிகமிக அதிகமான தளர்வு

ANNEXURE-XI

PROCEDURE FOR WARM WATER FOOT BATH

STEP 1:

Take 2 litres of warm water in a large basin.

STEP 2:

Check the temperature of the water (36-38 degree Celsius) with the help of lotion thermometer.

STEP 3:

The researcher makes the patient comfortably in sitting position on the chair.

STEP 4:

The researcher immerses the patient's feet and ankles into the warm water for 15 minutes**.**

STEP 5:

The researcher takes away the patients feet and ankles from the warm water and wipes it with sponge towel.

STEP 6:

The researcher makes the patient in comfortable lying position

ANNEXURE- XII

FORMULAS USED FOR DATA ANALYSIS

DESCRIPTIVE STATISTICS

Mean $\bar{x} = \frac{\sum x}{N}$

Standard deviation $s = \sqrt{\frac{\sum (x-\bar{x})^2}{n-1}}$

INFERENTIAL STATISTICS

Independent 't' test $t = |x_1 - x_2| \Big/ \sqrt{\frac{{s_1}^2}{n_1} + \frac{{s_2}^2}{n_2}}$

$$s = \sqrt{\frac{(n_1-1){s_1}^2+(n_2-1){s_2}^2}{n_1+n_2-2}}$$

Paired 't' test $t = \bar{d}\sqrt{n} \Big/ s$

$$s = \sqrt{\sum \left(d - \bar{d}\right)^2 \Big/ n-1}$$

Chi-Square test $x^2 = \sum \frac{(o-e)^2}{e}$

ANNEXURE -XIII

PHOTOGRAPHS OF CONDUCTING STUDY